Prepared in cooperation with the Louisiana Coastal Area Science and Technology Program

Water-Quality, Bed-Sediment, and Discharge Data for the Mississippi River-Gulf Outlet and Adjacent Waterways, Southeastern Louisiana, August 2008 Through December 2009

Open-File Report 2012–1056

U.S. Department of the Interior
U.S. Geological Survey

Cover: Construction of the rock barrier across the Mississippi River Gulf Outlet in early June 2009 (photograph by Dennis K. Demcheck, U.S. Geological Survey).

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By Christopher M. Swarzenski, Scott V. Mize, and John K. Lovelace

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U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Marcia K. McNutt, Director

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Conversion Factors

Inch/Pound to SI

Multiply	By	To obtain
	Length	
inch (in.)	25.4	millimeters (mm)
inch (in.)	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)
	Area	
square foot (ft^2)	0.09290	square meter (m^2)
	Volume	
cubic foot (ft^3)	0.02832	cubic meter (m^3)
	Flow rate	
foot per second (ft/s)	0.3048	meter per second (m/s)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32$$

Horizontal coordinate information is referenced North American Datum of 1927 (NAD 27).

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25°C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L).

Water-Quality, Bed-Sediment, and Discharge Data for the Mississippi River-Gulf Outlet and Adjacent Waterways, Southeastern Louisiana, August 2008 Through December 2009

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Abstract

The Mississippi River-Gulf Outlet navigation channel (MRGO) was constructed in the early 1960s to provide a safer and shorter route between the Gulf of Mexico and the Port of New Orleans for deep-draft, ocean-going vessels and to promote the economic development of the Port of New Orleans. In 2006, the U.S. Army Corps of Engineers developed a plan to de-authorize the MRGO. The plan called for a rock barrier to be constructed across the MRGO near Bayou La Loutre. In 2008, the U.S. Geological Survey, in cooperation with the Louisiana Coastal Area Science and Technology Program began a study to document the impacts of the rock barrier on water-quality and flow before, during, and after its construction. Water-quality, bed-sediment, and discharge data were collected in the MRGO and adjacent water bodies from August 2008 through December 2009.

Introduction

The Mississippi River-Gulf Outlet navigation channel (MRGO) (fig. 1) was constructed in the early 1960s to provide a safer and shorter route between the Gulf of Mexico and the Port of New Orleans for deep-draft, ocean-going vessels and to promote the economic development of the Port of New Orleans. The MRGO was envisioned as a major commercial asset for the region (Shaffer and others, 2009).

However, decreased ship traffic, environmental concerns, and Hurricane Katrina in August 2005 caused the U.S. Army Corps of Engineers (USACE) to de-authorize the MRGO in 2006. The de-authorization plan called for a rock barrier to be constructed across the MRGO near Bayou La Loutre (U.S. Army Corps of Engineers, 2010). By blocking or limiting tidal exchange in the MRGO, the rock barrier could affect water quality and flow in the MRGO and water quality in Lake Pontchartrain and Lake Borgne. In 2008, in cooperation with the Louisiana Coastal Area Science and Technology Program, a collaboration between the USACE and the Coastal Protection and Restoration Authority of Louisiana, the U.S. Geological Survey (USGS) began a study to document the impacts of the rock barrier before, during, and after its construction.

Purpose and Scope

This report presents water-quality, bed-sediment, and discharge data collected in the MRGO and adjacent water bodies from August 2008 through December 2009. These data represent conditions in the MRGO before, during, and immediately after construction of a rock barrier across the MRGO near Bayou La Loutre. Discrete and continuous water-quality data collected in the MRGO upstream and downstream from the rock barrier and in Lake Borgne, Violet Canal, and the Inner Harbor Navigation Canal (IHNC) are presented in tables and figures. Bed-sediment and discharge data collected or measured at selected sites in the MRGO are presented in tabular format. A map shows the location of data-collection sites (fig. 1).

Description of the Study Area

The MRGO, located in southeastern Louisiana, trends in a northwesterly-southeasterly direction and extends from the Gulf Intracoastal Waterway (GIWW) near Michoud, La., through Breton Sound into the 38-foot (ft) depth contour in the Gulf of Mexico (fig. 1). All reaches of the MRGO were authorized to be 36-ft deep with a bottom width of 500 ft except in Breton Sound, where it was authorized to be 38-ft deep, with a 600-ft bottom width. Construction of the channel began in March 1958 near the IHNC and the GIWW. By July 1963, an interim channel had been completed to the full design depth but only half of the design width, and the first vessel had traveled down the channel. By 1968, all dredging had been completed, and the channel was at the full design dimensions. By 2006 erosion had widened the channel from the original 500 ft to more than 1,500 ft in many places, whereas damage caused by Hurricane Katrina in August 2005 had reduced the

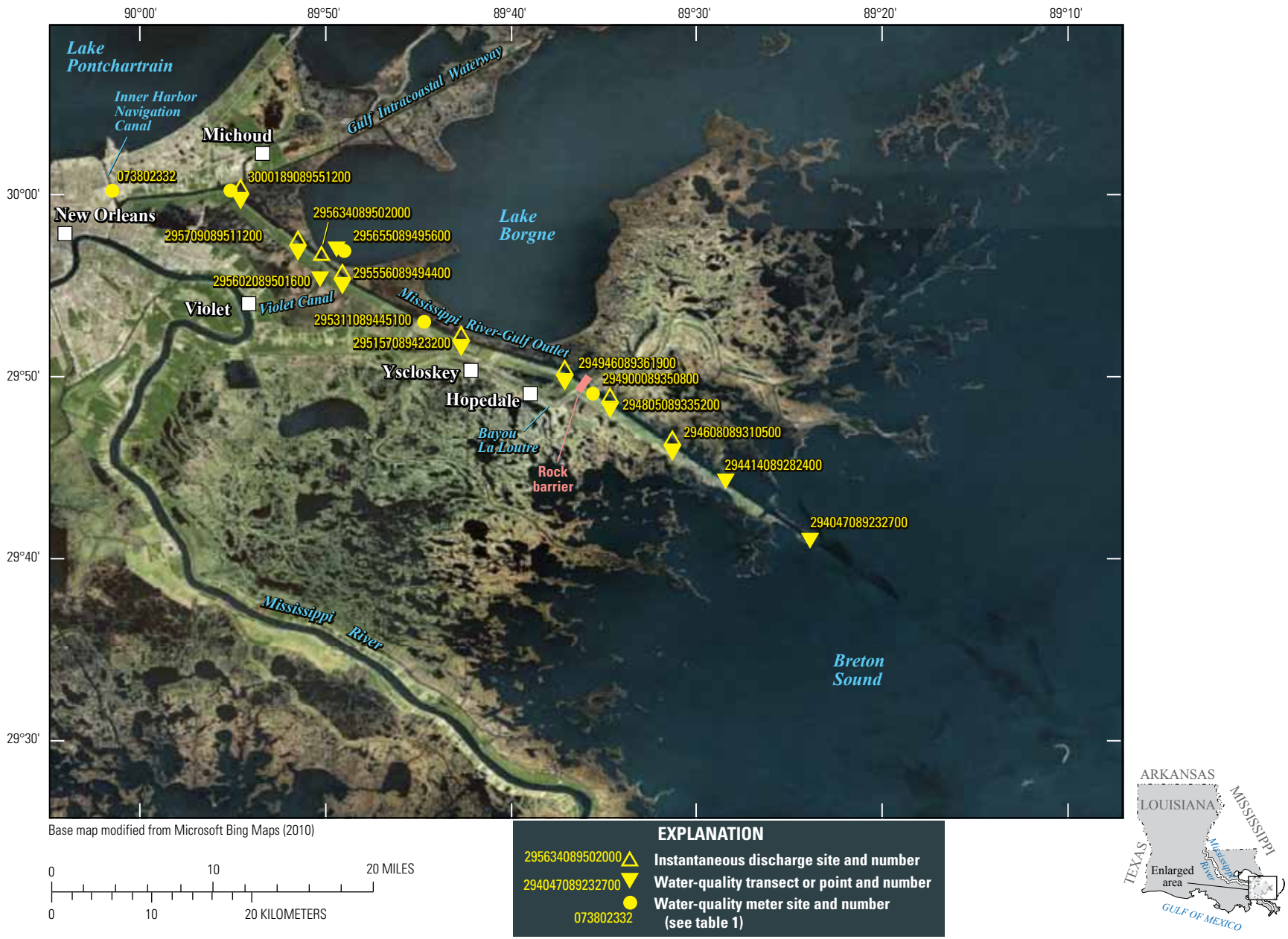

Figure 1. Location of data-collection sites in the Mississippi River-Gulf Outlet and adjacent waterways.

channel depth to 22 ft in places, which restricted deep-draft vessel access (U.S. Army Corps of Engineers, 2010).

The MRGO was dredged through shallow bays, coastal marshes, and cypress swamps. The channel changed local and regional hydrologic circulation patterns and allowed saltwater from the Gulf of Mexico to enter wetlands that were dominated by vegetation with a low tolerance to salinity. In addition to the direct loss of wetlands caused by the channel construction, the increased salinity could have exacerbated wetland loss and conversion of freshwater marsh to brackish or saltwater marsh in areas adjacent to the MRGO. The MRGO also altered salinity in Lake Pontchartrain and Lake Borgne (Shaffer and others, 2009).

The MRGO was de-authorized in 2008. An important feature of the de-authorization was the placement of a rock barrier across the channel near the Bayou La Loutre Ridge near Hopedale, La., to limit tidal exchange and prevent navigation. Construction of the rock barrier began in February 2009 with the placement of a wide rock base along the channel bottom. The rock barrier was extended above the water surface for the entire channel width on June 4, 2009. The rock barrier, reaching a height of 7 ft above average water levels, was completed at the end of July. Details of the deauthorization and closure can be found on the web at http://www.mrgo.gov.

Methods

A multiparameter water-quality meter was used to measure specific conductance, pH, temperature, dissolved oxygen, and salinity at various depths along transects in the MRGO and at selected points in adjacent waterways. Measurements along transects were made at three or five evenly spaced points across the full width of the channel. Vertical profiles of water quality were measured at three points where the channel was about 900 ft wide and at five points where the channel width was greater than about 900 ft. At each point, vertical water-quality profiles were made by making measurements at every 5 or 10 ft of depth starting at 0.5 ft from the channel bottom and ending at 0.5 ft from the water surface. Channel widths and the distances from the banks were determined using a laser range finder. The water-quality meter was calibrated for each parameter on each day; measurements were made following USGS field methods presented in Wilde (variously dated). Temperature and specific conductance were measured and recorded at 60- or 120-minute intervals by continuous water-quality meters suspended in the water column at selected monitoring sites. The meters were suspended in stilling wells attached to existing structures or galvanized steel pipes driven into the channel bottom. The stilling wells were constructed of 2-inch (in.) polyvinyl-chloride (PVC) pipe with 18 in. of perforated copper pipe at the bottom to inhibit the growth of algae on the monitor's sensors. The meters were serviced and calibrated during routine site visits using methods described in Wagner and others (2006). Temperature data recorded by the meters are not included herein, but are on file at the USGS office in Baton Rouge, La.

Bed-sediment samples were collected using a Petite Ponar bottom-material sampler at each transect. The samples were collected at three evenly spaced locations to the left, right, and center of the channel at each transect and composited in the field using techniques discussed in Radtke (2005). The silt and clay fraction of the composited sample was determined using dry sieve and hydrometer analyses using techniques discussed in Guy (1969). The amounts of organic matter in the samples were determined by measuring the loss on ignition at 550 degrees Celsius using techniques discussed in Fishman and Friedman (1989). All sediment analyses were performed at the USGS sediment laboratory in Baton Rouge.

Instantaneous discharge measurements were made using a 1,200 kilohertz boat-mounted Acoustic Doppler Current Profiler (ADCP) following standard USGS protocol (Simpson and Oltmann, 1993). Depth profiles of the channel bottom were made using the ADCP.

Water-Quality, Bed-Sediment, and Discharge Data

Specific conductance, pH, temperature, dissolved oxygen, and salinity were measured at seven transects in the MRGO and at single points in Lake Borgne and Violet Canal from August 2008 through December 2009 (fig. 1; tables 1 and 2 at end of report). Measurements generally were made over 1- or 2-day periods every 4 to 6 weeks during June through September and about every 8 weeks during October through May. Measurements made during August and November 2008 and January and March 2009 document conditions before the barrier breached the water surface. Measurements made from June to December 2009 document conditions in MRGO subsequent to barrier completion.

After hypoxic conditions (dissolved oxygen concentration less than 2 milligrams per liter [mg/L]) were documented downstream from the rock barrier at transects near miles 30 and 34 during June 2009 (table 2), water quality was measured along two additional transects near miles 20 and 27 (fig. 1) further downstream towards the Gulf of Mexico to track the extent of hypoxic conditions.

Six continuous water-quality meters were deployed at three sites in the MRGO and one site each in Lake Borgne and the IHNC in late December 2008 to record both short-term (less than one month) and long-term water-quality changes (fig. 1). The meters were suspended at a depth of 10 ft below the water surface at sites in the MRGO near miles 35, 46, and 59; at a depth of 10 ft at the site in the IHNC; and at a depth of 6 ft at the site in Lake Borgne near the MRGO. An additional meter was suspended 20 ft below the water surface at a site in the MRGO near mile 46 to enable limited evaluation of salinity stratification. Figure 2 and tables 3 and 4 at end of report

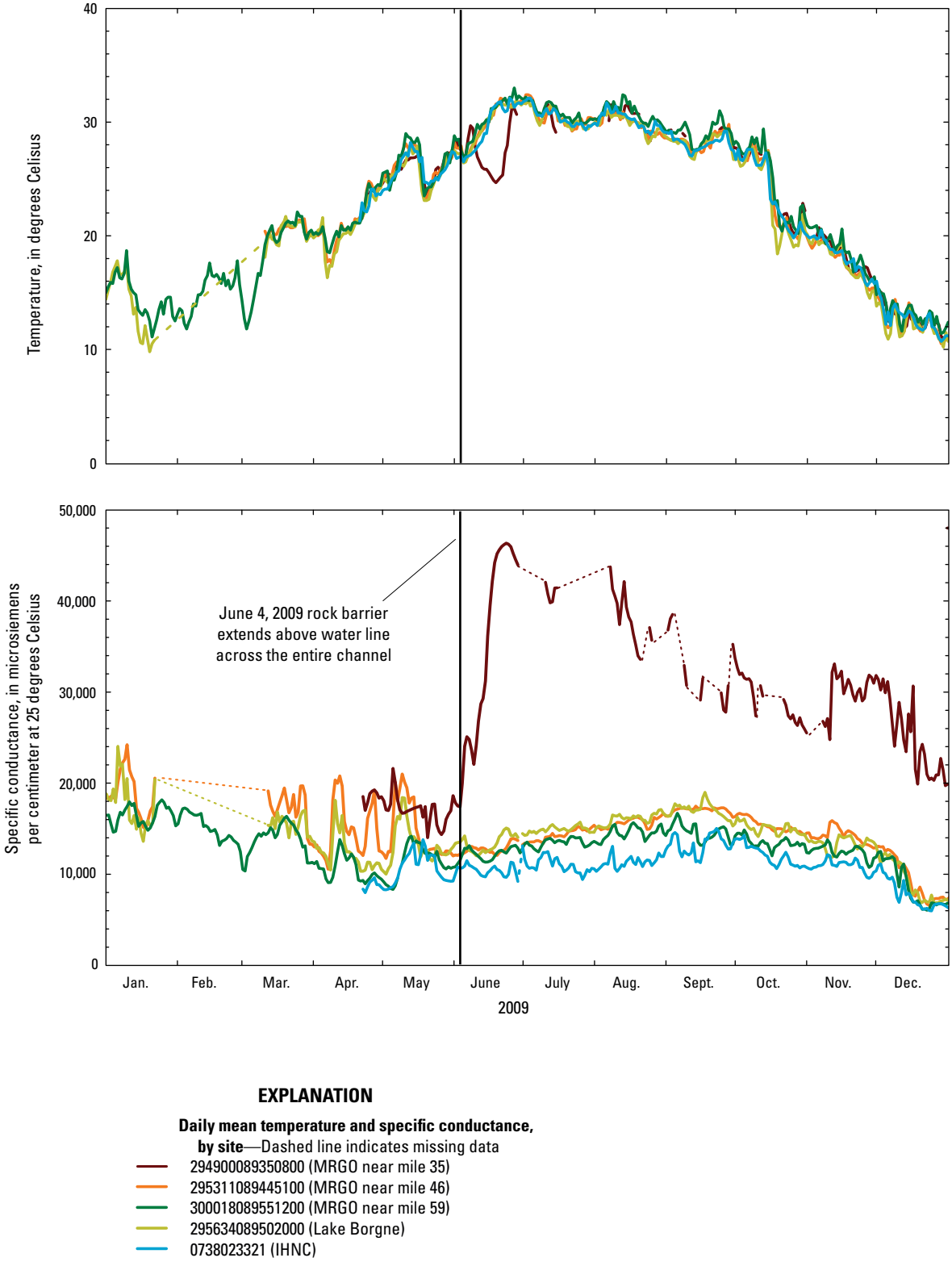

Figure 2. Daily mean temperature and specific conductance at selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and the Inner Harbor Navigation Canal (IHNC), January through December 2009.

present the daily mean temperature and specific conductance at the sites from January through December 2009.

Placement of the continuous meters was primarily limited to existing structures in the channel because of concerns about boat traffic and cost and time constraints on the construction of new data-collection platforms. Existing structures in the MRGO included navigation markers located in relatively shallow water near the sides of the deeper shipping lane. Hence, the maximum depths at which the meters could be placed in the MRGO generally were limited to about 10 ft below the water surface. Because the depth of the shipping lane generally ranged from 35 to 40 ft in most places, higher specific conductance values than those measured could have been present at greater depths because of salinity stratification. During the project, vertical profiles of water quality along the transects were found to provide a more comprehensive indication of channel salinity stratification than the continuous water-quality meters.

Bed-sediment samples were collected at the initial seven transect sites on June 6, 2009, to document the character of the sediment in the MRGO prior to any changes that might occur as the result of rock barrier and reduced flow. The samples were analyzed for grain size and the amounts of mineral and organic matter (loss on ignition) (table 5 at end of report). Samples represent conditions in the uppermost 4–6 in. of bed sediment. The collected data provide a baseline for conditions in the MRGO at the beginning of the rock barrier placement.

Instantaneous discharge was measured at the transect sites in the MRGO and at the opening into Lake Borgne on March 9 and June 17, 2009 (table 6 at end of report). These two sampling dates represent conditions before and after the barrier affected tidal exchange. Figures 3–6 show channel cross-sections at the transect sites in the MRGO and Lake Borgne in southeastern Louisiana on March 9, 2009, when construction of the rock barrier had just started.

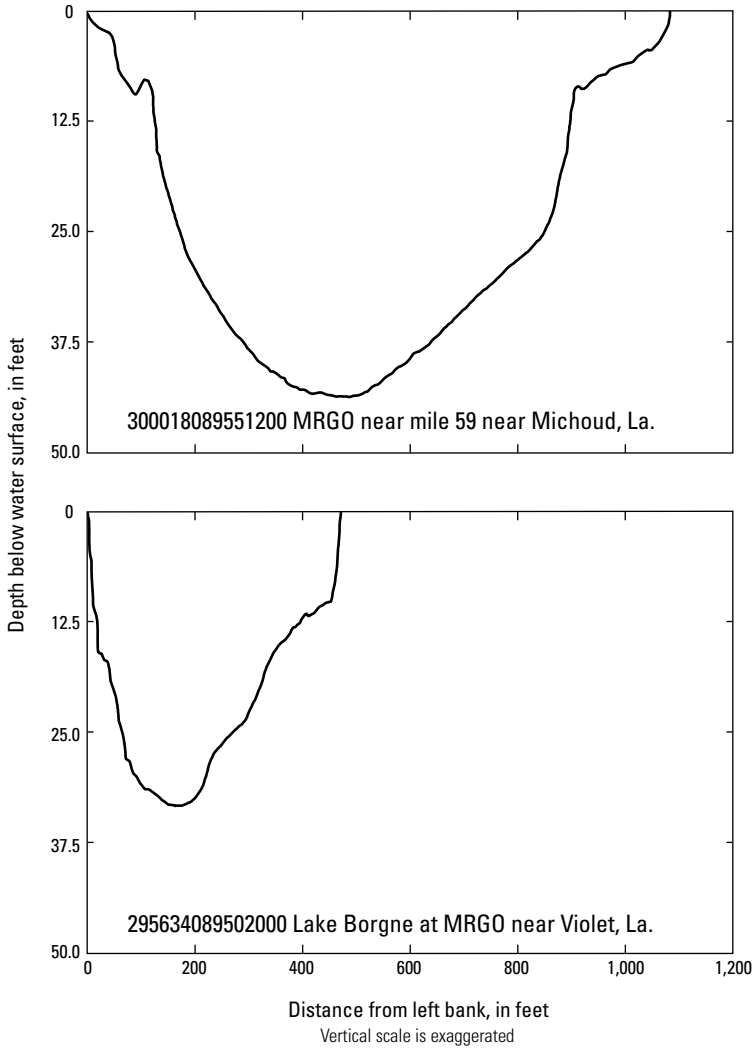

Figure 3. Channel cross sections at locations in the Mississippi River-Gulf Outlet (MRGO) and Lake Borgne, Louisiana.

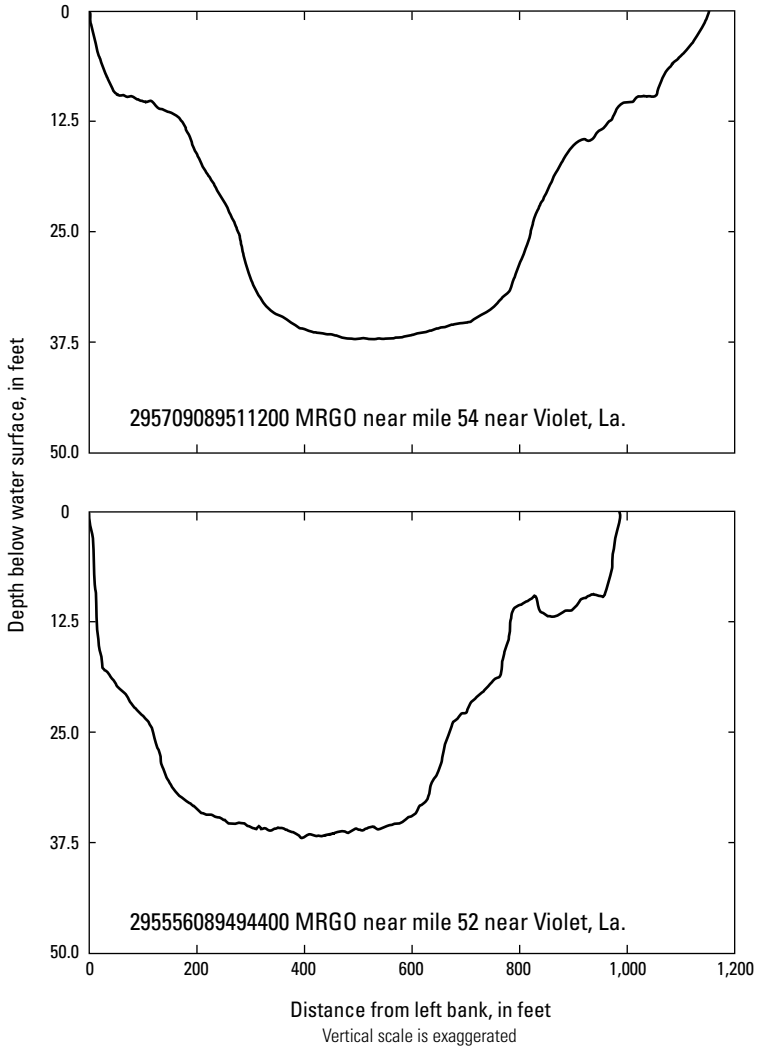

Figure 4. Channel cross sections at locations in the Mississippi River-Gulf Outlet (MRGO), Louisiana.

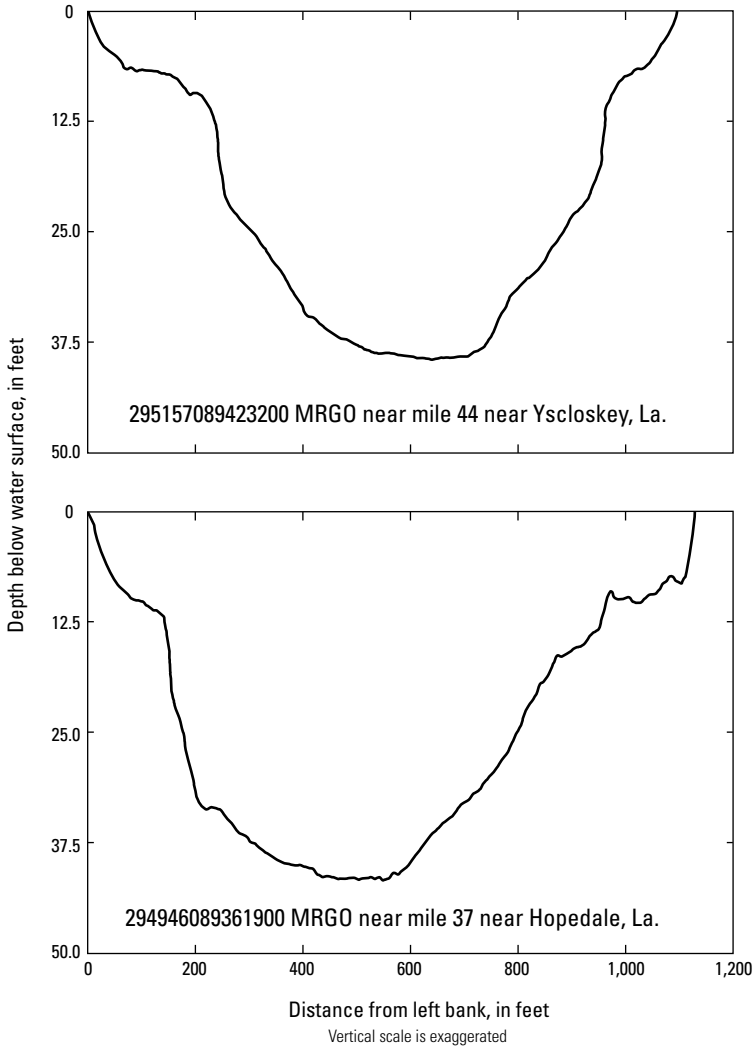

Figure 5. Channel cross sections at locations in the Mississippi River-Gulf Outlet (MRGO), Louisiana.

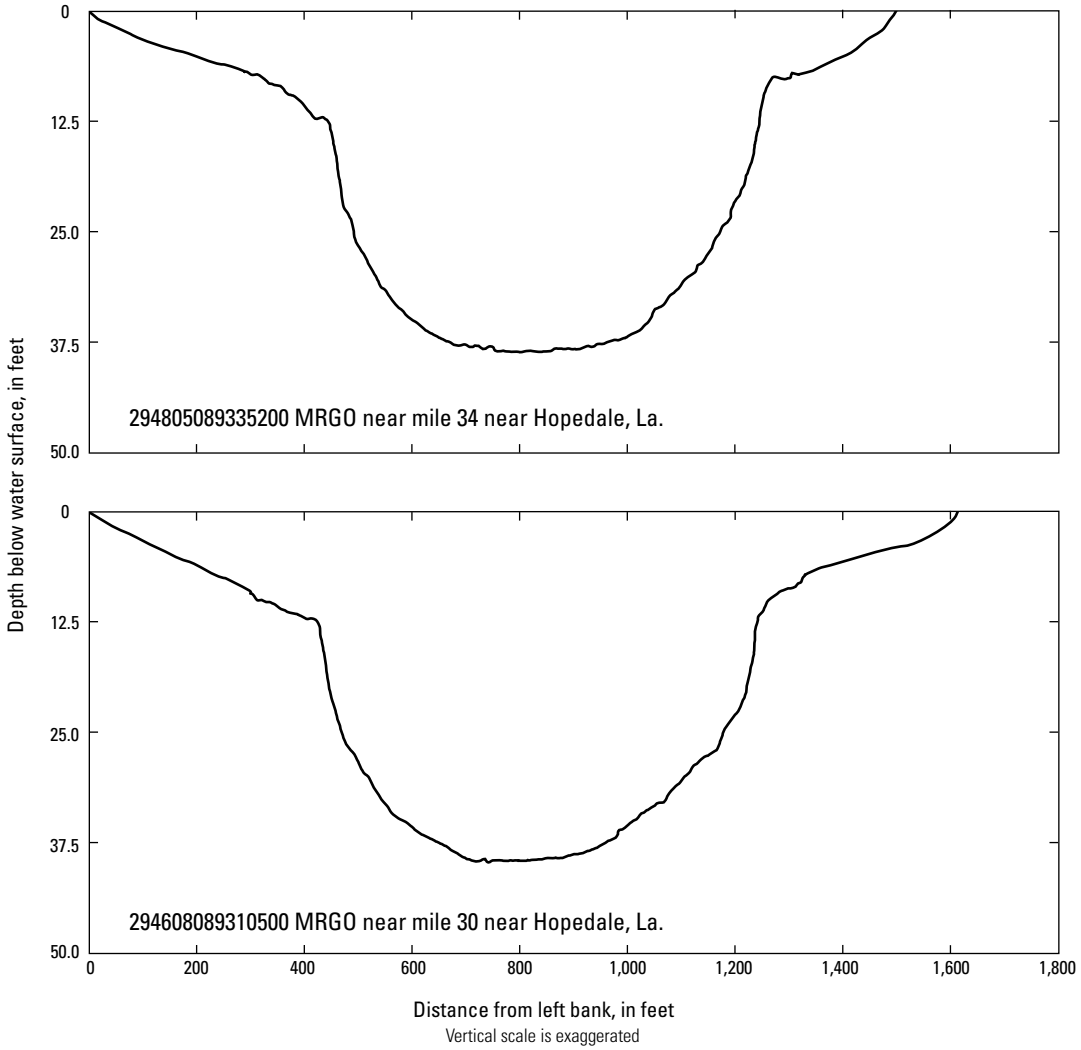

Figure 6. Channel cross sections at locations in the Mississippi River-Gulf Outlet (MRGO), Louisiana.

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Table 1. Data-collection sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, Violet Canal, and the Inner Harbor Navigation Canal in southeastern Louisiana, August 2008 through December 2009.

[NAD 27, North American Datum of 1927; Data-collection activity codes: T, water-quality transect; P, water-quality point; S, bed sediment; Q, discharge; M, continuous water-quality meter]

Station number	Station name	Latitude (NAD 27)	Longitude (NAD 27)	Data-collection activity code
294047089232700	MRGO near mile 20 near Hopedale, La.	294047	892327	T
294414089282400	MRGO near mile 27 near Hopedale, La.	294414	892824	T
294608089310500	MRGO near mile 30 near Hopedale, La.	294608	893105	T,S,Q
294805089335200	MRGO near mile 34 near Hopedale, La.	294805	893352	T,S,Q
294900089350800	MRGO near mile 35 near Hopedale, La.	294900	893508	M,S
294946089361900	MRGO near mile 37 near Hopedale, La.	294946	893619	T,S,Q
295157089423200	MRGO near mile 44 near Yscloskey, La.	295157	894232	T,S,Q
295311089445100	MRGO near mile 46 near Yscloskey, La.	295311	894451	M
295556089494400	MRGO near mile 52 near Violet, La.	295556	894944	T,S,Q
295709089511200	MRGO near mile 54 near Violet, La.	295709	895112	T,S,Q
300018089551200	MRGO near mile 59 near Michoud, La.	300108	895512	T,M,S,Q
295655089495600	Lake Borgne near MRGO near Violet, La.	295655	894956	P,M,S
295634089502000	Lake Borgne at MRGO near Violet, La.	295634	895020	Q
295602089501600	Violet Canal near MRGO near Violet, La.	295602	895016	P,S
0738023321	Industrial Canal[1] at I-10 at New Orleans, La.	300016	900132	M

[1]Referred to in report as the Inner Harbor Navigation Canal.

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 29404089232700 MRGO near mile 20 near Hopedale, La.								
6/17/2009	110	31	24.3	51,700	34.0	1.8	26	7.7
6/17/2009	110	30	24.3	51,700	34.0	1.8	26	7.8
6/17/2009	110	20	24.3	51,500	33.9	1.8	26	7.8
6/17/2009	110	10	24.4	51,300	33.7	1.5	21	7.7
6/17/2009	110	5	25.2	48,500	31.7	1.6	23	7.7
6/17/2009	110	1	28.2	33,700	21.0	8.4	122	8.2
6/17/2009	220	20	--	51,600	34.0	1.8	26	7.8
6/17/2009	220	10	24.4	51,400	33.8	1.5	22	7.8
6/17/2009	220	5	25.4	46,700	30.2	2.4	35	7.8
6/17/2009	220	1	29.7	33,500	20.9	7.9	116	8.2
10/8/2009	144	11	27.3	35,200	22.0	2.8	42	7.3
10/8/2009	144	1	28.5	31,700	19.7	6.6	95	7.5
10/8/2009	240	30	27.6	38,100	24.2	.7	10	7.6
10/8/2009	240	20	27.5	38,000	24.0	.4	5	7.6
10/8/2009	240	15	27.4	37,400	23.6	.7	9	7.6
10/8/2009	240	10	27.0	34,100	21.5	3.3	47	7.6
10/8/2009	240	1	28.1	32,200	20.0	5.4	78	7.7
10/8/2009	365	25	27.5	38,000	24.0	.4	6	7.7
10/8/2009	365	20	27.5	37,900	24.0	.3	4	7.7
10/8/2009	365	15	27.3	36,700	23.2	.5	7	7.7
10/8/2009	365	10	27.0	33,800	21.2	3.5	51	7.7
10/8/2009	365	1	28.1	32,400	20.1	5.7	82	7.8
Station number 294414089282400—MRGO near Mile 27 near Hopedale, La.								
6/17/2009	300	37	24.4	50,800	33.3	0.8	11	7.5
6/17/2009	300	30	24.4	50,800	33.3	.8	13	7.5
6/17/2009	300	20	24.4	50,800	33.3	.8	12	7.5
6/17/2009	300	10	24.6	50,500	33.1	.6	9	7.6
6/17/2009	300	5	25.4	47,700	30.6	1.1	16	7.6
6/17/2009	300	1	28.5	41,400	26.1	8.9	131	8.1
7/30/2009	100	14	27.5	45,900	29.7	2.6	40	--
7/30/2009	100	10	29.3	42,100	27.0	3.0	45	--
7/30/2009	100	1	29.8	41,700	26.7	7.1	110	--
7/30/2009	200	35	25.9	49,200	32.2	2.6	32	--
7/30/2009	200	30	26.2	48,700	31.8	1.4	21	--
7/30/2009	200	20	26.9	48,000	31.3	.2	3	--
7/30/2009	200	10	29.5	42,100	27.0	3.7	57	--
7/30/2009	200	1	30.2	41,300	26.4	7.4	114	--
7/30/2009	300	37	25.9	49,200	32.2	.9	14	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294414089282400—MRGO near Mile 27 near Hopedale, La.—Continued								
7/30/2009	300	30	26.6	48,800	31.8	0.1	2	--
7/30/2009	300	20	26.6	48,900	31.9	.1	2	--
7/30/2009	300	10	29.9	42,000	26.9	4.7	72	--
7/30/2009	300	1	30.2	41,200	26.4	6.9	107	--
7/30/2009	400	25	26.8	48,300	31.5	2.8	31	--
7/30/2009	400	20	27.0	47,500	30.9	.3	4	--
7/30/2009	400	10	29.6	41,800	26.8	4.6	83	--
7/30/2009	400	1	30.2	41,100	26.3	7.4	114	--
7/30/2009	500	9	29.6	41,800	26.3	7.0	108	--
7/30/2009	500	1	30.3	41,100	26.8	7.6	117	--
9/2/2009	100	10	28.2	37,600	23.8	7.0	--	8.1
9/2/2009	100	1	28.3	37,500	23.7	10.1	147	8.2
9/2/2009	200	29	28.3	40,000	25.5	.5	7	7.8
9/2/2009	200	20	28.3	38,500	24.4	5.5	81	7.9
9/2/2009	200	10	28.4	37,800	23.9	7.9	116	8.0
9/2/2009	200	1	28.4	37,300	23.5	10.6	154	8.2
9/2/2009	300	40	27.8	44,700	28.8	.5	7	7.7
9/2/2009	300	30	28.1	39,400	25.0	2.8	41	7.7
9/2/2009	300	20	28.1	38,500	24.4	5.7	83	8.0
9/2/2009	300	10	28.6	37,800	23.9	9.2	136	8.1
9/2/2009	300	1	28.6	37,000	23.3	12.5	183	8.3
9/2/2009	400	27	28.2	39,000	24.8	3.2	48	7.9
9/2/2009	400	20	28.3	38,700	24.4	5.7	84	8.2
9/2/2009	400	10	28.7	37,700	23.8	8.0	118	8.2
9/2/2009	400	1	28.5	36,800	23.2	10.3	152	8.2
9/2/2009	500	9	28.4	37,600	23.8	8.0	118	8.2
9/2/2009	500	1	28.4	36,700	23.1	10.4	157	8.3
10/8/2009	100	1	29.2	32,400	20.1	6.9	101	7.9
10/8/2009	100	5	29.2	32,400	20.1	6. 8	99	7.9
10/8/2009	200	1	29.2	32,500	20.2	6.7	99	7.9
10/8/2009	200	9	29.1	32,300	20.2	6.4	93	7.9
10/8/2009	300	38	27.9	40,500	25.8	.4	5	7.7
10/8/2009	300	30	27.4	38,900	23.9	.4	5	7.7
10/8/2009	300	25	27.0	35,400	22.2	2.2	30	7.7
10/8/2009	300	20	26.8	33,900	21.3	3.0	42	7.7
10/8/2009	300	10	28.5	32,300	20.1	6.4	92	7.6
10/8/2009	300	1	28.9	32,400	20.1	6.8	98	7.8
10/8/2009	405	37	27.9	40,700	20.9	.5	7	7.7
10/8/2009	405	30	27.8	38,900	24.6	.4	4	7.7
10/8/2009	405	25	26.9	35,000	23.0	2.1	29	7.7

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent satura-tion)	pH (standard units)
Station number 294414089282400—MRGO near Mile 27 near Hopedale, La.—Continued								
10/8/2009	405	20	26.7	33,600	21.0	3.4	48	7.7
10/8/2009	405	10	28.3	32,300	20.0	6.2	90	7.7
10/8/2009	405	1	28.7	32,400	20.1	6.1	89	7.8
10/8/2009	500	15	27.7	32,400	20.2	5.1	72	7.8
10/8/2009	500	10	28.1	32,400	20.1	6.0	86	7.8
10/8/2009	500	1	28.2	32,300	20.1	6.3	91	7.8
Station number 294608089310500—MRGO near mile 30 near Hopedale, La.								
8/15/2008	90	5	27.8	30,600	19.0	6.0	84	7.8
8/15/2008	90	1	28.0	30,600	19.0	6.2	89	7.9
8/15/2008	180	34	24.9	43,100	27.7	4.9	69	7.7
8/15/2008	180	30	24.9	42,800	27.5	5.0	70	7.7
8/15/2008	180	25	25.4	40,600	26.2	4.7	67	7.8
8/15/2008	180	18	27.5	31,200	19.3	5.8	82	7.8
8/15/2008	180	15	27.6	31,000	19.2	5.9	83	7.8
8/15/2008	180	10	27.7	30,800	19.1	6.0	85	7.9
8/15/2008	180	5	27.8	30,800	19.0	6.1	86	7.9
8/15/2008	180	1	27.9	30,700	19.0	6.3	89	7.9
8/15/2008	290	41	24.7	43,600	28.1	5.0	71	7.7
8/15/2008	290	30	25.0	42,200	27.1	5.1	72	7.8
8/15/2008	290	20	26.9	33,200	20.9	5.5	77	7.8
8/15/2008	290	15	27.6	30,900	19.1	6.1	86	7.9
8/15/2008	290	10	27.9	30,700	19.0	6.4	92	7.9
8/15/2008	290	1	28.1	30,600	18.9	6.8	97	7.9
8/15/2008	400	17	27.6	30,800	19.0	6.4	90	7.9
8/15/2008	400	10	27.6	30,800	19.0	6.4	90	7.9
8/15/2008	400	1	27.7	30,600	18.9	6.3	90	7.9
8/15/2008	485	8	27.6	30,700	19.0	6.1	87	7.9
8/15/2008	485	1	27.7	30,600	18.9	6.4	92	7.9
9/26/2008	90	12	25.7	25,100	15.2	5.7	77	--
9/26/2008	90	1	27.1	23,000	13.9	6.5	94	--
9/26/2008	180	35	25.3	32,100	20.0	6.6	91	--
9/26/2008	180	25	25.4	30,700	19.0	6.3	86	--
9/26/2008	180	15	25.7	25,300	15.4	6.6	89	--
9/26/2008	180	5	26.3	23,500	14.2	7.8	105	--
9/26/2008	180	1	27.1	23,000	13.9	7.8	106	--
9/26/2008	290	42	25.3	30,700	19.0	6.5	86	--
9/26/2008	290	30	25.3	31,000	19.3	6.4	87	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294608089310500—MRGO near mile 30 near Hopedale, La.—Continued								
9/26/2008	290	25	25.4	30,700	19.0	6.4	87	--
9/26/2008	290	20	25.5	27,900	17.1	6.5	87	--
9/26/2008	290	15	25.6	26,700	16.3	6.6	88	--
9/26/2008	290	10	25.9	24,100	14.6	7.0	93	--
9/26/2008	290	5	26.0	23,800	14.4	7.2	97	--
9/26/2008	290	1	26.8	22,900	13.8	7.5	102	--
9/26/2008	400	17	25.8	26,100	15.9	6.6	87	--
9/26/2008	400	10	25.7	24,300	14.7	6.3	84	--
9/26/2008	400	1	26.8	21,900	13.1	7.6	103	--
9/26/2008	485	6	27.9	23,200	12.7	7.3	95	--
9/26/2008	485	1	27.0	21,300	14.0	8.1	109	--
11/24/2008	90	5	14.2	19,800	11.7	9.8	102	8.1
11/24/2008	90	1	14.2	19,710	11.7	9.9	103	8.0
11/24/2008	180	13	14.1	25,400	15.5	8.6	91	7.9
11/24/2008	180	10	14.1	22,100	13.2	8.7	91	7.9
11/24/2008	180	1	14.1	19,900	11.7	9.5	97	8.0
11/24/2008	290	37	13.6	38,100	24.1	8.7	97	7.8
11/24/2008	290	30	13.6	38,100	24.2	8.7	97	7.8
11/24/2008	290	20	13.9	37,300	23.6	8.5	96	7.9
11/24/2008	290	10	14.0	20,600	12.3	8. 5	88	8.0
11/24/2008	290	1	14.1	19,700	11.7	9.3	96	8.0
11/24/2008	400	17	14.4	31,200	19.3	8.3	91	7.8
11/24/2008	400	10	14.0	21,900	13.1	8.7	92	8.0
11/24/2008	400	1	14.1	19,700	11.7	9.5	99	8.0
11/24/2008	485	3	14.2	20,000	11.9	9.8	102	8.0
11/24/2008	485	1	14.3	19,900	11.8	9.9	103	8.0
3/11/2009	90	6	20.7	25,300	15.5	8.9	108	7.9
3/11/2009	90	1	20.8	25,000	15.3	9.3	114	8.0
3/11/2009	180	14	20.1	25,700	15.8	9.6	116	8.0
3/11/2009	180	10	20.4	25,300	15.5	9.5	115	8.0
3/11/2009	180	1	20.7	24,900	15.2	9.6	116	8.0
3/11/2009	290	40	14.8	39,300	25.0	8.3	97	7.8
3/11/2009	290	30	14.7	39,200	25.0	7.7	88	7.9
3/11/2009	290	20	17.6	28,500	17.6	8.6	99	7.9
3/11/2009	290	10	20.2	25,400	15.5	9.4	114	8.0
3/11/2009	290	1	20.6	24,800	15.1	9.6	117	8.0
3/11/2009	400	40	14.8	39,300	25.1	8.1	93	7.9
3/11/2009	400	30	14.7	39,300	25.1	7.9	91	7.9
3/11/2009	400	20	17.2	28,700	17.6	8.5	98	7.9
3/11/2009	400	10	20.1	25,300	15.4	9.2	110	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294608089310500—MRGO near mile 30 near Hopedale, La.—Continued								
3/11/2009	400	1	20.6	24,700	15.1	9.6	116	8.0
3/11/2009	485	15	19.7	25,700	15.7	9.7	117	8.0
3/11/2009	485	10	19.8	25,500	15.6	9.6	116	8.0
3/11/2009	485	1	20.3	25,100	15.3	9.6	117	8.0
6/10/2009	90	6	27.1	26,400	15.8	3.0	41	7.7
6/10/2009	90	1	30.9	19,600	11.6	8.3	119	8.0
6/10/2009	180	30	25.7	32,600	20.4	.9	12	7.5
6/10/2009	180	20	25.8	32,500	20.2	.8	10	7.5
6/10/2009	180	10	26.4	28,500	17.5	1.3	17	7.5
6/10/2009	180	1	31.0	19,500	11.5	8.1	117	8.1
6/10/2009	290	39	25.7	32,600	20.4	1.0	14	7.5
6/10/2009	290	30	25.7	32,600	20.4	.9	12	7.5
6/10/2009	290	20	25.8	32,500	20.3	.9	12	7.5
6/10/2009	290	10	26.4	28,400	17.5	1.5	20	7.5
6/10/2009	290	1	31.1	18,500	11.5	8.4	120	8.1
6/10/2009	400	19	25.3	32,500	20.2	.6	9	7.5
6/10/2009	400	10	26.4	28,300	17.4	1.2	17	7.6
6/10/2009	400	1	31.1	19,400	11.5	8.2	118	8.1
6/10/2009	485	4	29.3	22,700	13.6	3.2	45	7.7
6/10/2009	485	1	31.1	20,300	12.1	8.2	118	8.1
7/30/2009	90	5	7.2	41,200	26.3	7.2	111	--
7/30/2009	90	1	30.2	41,100	26.3	7.3	113	--
7/30/2009	180	30	25.9	49,200	32.1	.3	5	--
7/30/2009	180	20	27.0	47,800	31.1	.1	2	--
7/30/2009	180	10	29.8	41,300	26.4	3.2	51	--
7/30/2009	180	1	30.1	41,100	26.3	6.5	100	--
7/30/2009	290	35	25.9	49,300	32.2	.5	6	--
7/30/2009	290	30	26.3	48,300	31.5	.1	2	--
7/30/2009	290	20	26.9	46,400	30.1	.1	1	--
7/30/2009	290	10	29.7	41,200	26.4	3.8	58	--
7/30/2009	290	1	30.1	41,100	26.3	7.3	113	--
7/30/2009	400	8.5	30.0	41,200	26.3	7.7	118	--
7/30/2009	400	1	30.1	41,100	26.3	7.8	121	--
7/30/2009	485	4	30.0	41,000	26.3	8.0	123	--
7/30/2009	485	1	30.1	41,000	26.3	8.1	124	--
9/2/2009	90	5	28.3	37,200	23.5	6.1	90	8.0
9/2/2009	90	1	28.5	36,900	23.3	6.4	95	8.0
9/2/2009	180	15	28.4	38,500	14.4	5.2	76	7.9
9/2/2009	180	10	28.4	38,000	24.1	5.5	81	8.0
9/2/2009	180	1	28.7	36,700	23.1	9.2	136	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294608089310500—MRGO near mile 30 near Hopedale, La.—Continued								
9/2/2009	290	40	27.6	46,200	29.9	0.4	6	7.7
9/2/2009	290	30	28.1	40,200	25.6	.3	4	7.7
9/2/2009	290	20	28.1	38,700	24.5	2.5	37	7.7
9/2/2009	290	10	28.3	37,900	23.9	5.8	86	7.8
9/2/2009	290	1	28.8	36,400	22.9	10.0	147	8.0
9/2/2009	400	28	28.7	40,000	25.4	.4	6	7.8
9/2/2009	400	25	28.6	39,900	25.4	.2	3	7.7
9/2/2009	400	20	28.4	39,100	24.8	2.0	30	7.7
9/2/2009	400	10	28.4	38,000	24.0	5.0	73	7.8
9/2/2009	400	1	28.6	36,000	22.6	9.8	145	8.1
9/2/2009	485	5	28.7	36,000	22.6	8.4	122	8.1
9/2/2009	485	1	28.9	35,700	22.4	9.0	132	8.1
10/8/2009	90	1	30.1	31,100	19.2	6.3	94	7.8
10/8/2009	90	5	28.7	31,500	19.6	5.9	86	7.8
10/8/2009	180	10	28.8	31,600	19.6	6.1	89	7.8
10/8/2009	180	1	29.7	31,400	19.4	6.0	88	7.7
10/8/2009	290	30	27.8	39,600	25.0	.7	11	7.6
10/8/2009	290	20	26.8	32,600	20.3	3.7	52	7.7
10/8/2009	290	10	29.5	31,600	19.6	5.9	85	7.7
10/8/2009	290	1	28.9	31,600	19.6	5.8	84	7.7
10/8/2009	290	36	28.0	41,600	26.6	.5	8	7.6
10/8/2009	400	30	27.9	38,000	24.1	.4	6	7.7
10/8/2009	400	26	26.9	35,200	22.0	1.2	28	7.7
10/8/2009	400	20	26.8	32,600	20.3	3.7	52	7.7
10/8/2009	400	10	28.7	31,600	19.6	5.6	81	7.7
10/8/2009	400	1	28.8	31,600	19.6	6.1	88	7.7
10/8/2009	485	5	28.5	31,700	19.7	6.5	94	7.7
10/8/2009	486	1	29.1	31,800	19.7	7.1	103	7.8
11/6/2009	90	6	19.6	28,900	17.9	7.6	92	8.2
11/6/2009	90	1	19.6	28,900	17.9	7.6	92	8.2
11/6/2009	180	10	19.3	28,800	17.8	7.4	89	8.1
11/6/2009	180	1	19.6	28,800	17.8	7.7	93	8.1
11/6/2009	290	40	19.7	35,500	22.5	.9	12	8.0
11/6/2009	290	35	19.7	35,600	22.5	3.7	46	8.0
11/6/2009	290	30	19.7	35,300	22.3	3.8	47	8.0
11/6/2009	290	25	20.1	34,700	21.8	4.8	60	8.0
11/6/2009	290	20	19.3	28,900	17.9	4.9	59	8.1
11/6/2009	290	10	19.4	28,800	17.8	6.9	84	8.0
11/6/2009	290	1	19.6	28,500	17.6	7.9	95	8.1
11/6/2009	400	23	20.2	28,200	17.4	7.4	91	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent satura-tion)	pH (standard units)
Station number 294608089310500—MRGO near mile 30 near Hopedale, La.—Continued								
11/6/2009	400	20	19.6	27,500	16.9	4.8	58	8.0
11/6/2009	400	10	19.5	28,600	17.7	7.4	89	8.0
11/6/2009	400	1	19.7	28,600	17.7	8.0	97	8.1
11/6/2009	485	4	20.0	28,700	17.7	7.9	97	8.1
11/6/2009	486	1	20.0	28,700	17.7	8.0	98	8.1
Station number 294805089335200—MRGO near mile 34 near Hopedale, La.								
8/15/2008	120	5	27.9	31,000	19.2	6.4	91	7.8
8/15/2008	120	1	28.7	30,400	18.8	6.6	94	7.8
8/15/2008	190	6	27.8	30,900	19.1	6.2	88	7.8
8/15/2008	190	1	28.5	30,500	18.8	6.6	94	7.8
8/15/2008	340	39	25.1	42,100	27.0	4.6	65	7.7
8/15/2008	340	30	25.2	41,500	26.7	4.7	66	7.7
8/15/2008	340	25	26.0	38,100	24.1	5.0	71	7.8
8/15/2008	340	20	27.3	31,700	19.7	5.8	82	7.8
8/15/2008	340	10	27.6	30,900	19.1	6.2	88	7.9
8/15/2008	340	1	28.0	30,700	19.0	7.0	100	7.9
8/15/2008	445	38	25.1	42,100	27.0	4.5	63	7.7
8/15/2008	445	30	25.2	41,800	26.8	4.5	64	7.7
8/15/2008	445	25	26.0	37,700	23.9	5.0	71	7.8
8/15/2008	445	20	27.3	31,600	19.5	5.8	82	7.8
8/15/2008	445	10	27.5	31,000	19.2	6.0	85	7.9
8/15/2008	445	1	28.0	30,800	19.0	6.7	96	7.9
8/15/2008	570	5	27.7	31,100	19.3	6.0	84	7.8
8/15/2008	570	1	28.4	31,000	19.2	6.5	93	7.9
9/26/2008	120	8	26.1	21,700	12.5	6.8	88	--
9/26/2008	120	1	26.8	20,900	13.0	7.3	102	--
9/26/2008	190	31	25.4	29,500	18.2	6.3	86	--
9/26/2008	190	15	25.9	24,600	14.9	6.2	83	--
9/26/2008	190	1	26.8	20,900	12.5	7.8	106	--
9/26/2008	340	41	25.4	29,600	18.3	6.4	87	--
9/26/2008	340	30	25.5	29,800	18.4	--	--	--
9/26/2008	340	25	25.5	29,100	17.9	6.4	86	--
9/26/2008	340	15	25.9	23,400	14.1	6.6	26	--
9/26/2008	340	1	26.7	20,600	12.2	7.7	106	--
9/26/2008	445	37	25.5	20,800	19.1	6.6	87	--
9/26/2008	445	30	25.5	29,800	18.4	6.3	86	--
9/26/2008	445	15	26.0	22,800	13.7	6.3	85	--
9/26/2008	445	1	26.6	20,300	12.1	8.4	113	--
9/26/2008	570	7	26.4	20,200	12.0	8.1	108	--
9/26/2008	570	1	26.5	19,800	11.7	8.2	111	--
11/24/2008	120	5	14.2	19,200	11.4	9.8	101	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294805089335200—MRGO near mile 34 near Hopedale, La.—Continued								
11/24/2008	120	1	14.2	19,200	11.4	9.8	102	8.0
11/24/2008	190	9	14.0	19,300	11.3	9.6	100	7.9
11/24/2008	190	1	14.0	19,100	11.4	9.7	100	7.9
11/24/2008	340	38	14.9	34,900	22.0	7.7	86	7.7
11/24/2008	340	30	14.9	34,900	21.9	7.5	84	7.8
11/24/2008	340	20	14.6	28,600	17.6	7.6	84	7.9
11/24/2008	340	10	13.9	19,600	11.6	8.6	89	7.9
11/24/2008	340	1	14.0	19,100	11.3	9.3	97	8.0
11/24/2008	445	33	14.9	35,200	22.1	7.7	87	7.8
11/24/2008	445	30	14.9	35,200	22.1	7.3	83	7.8
11/24/2008	445	20	14.5	28,000	17.2	7.7	83	7.9
11/24/2008	445	10	13.8	19,300	11.5	8.6	88	8.0
11/24/2008	445	1	14.0	19,100	11.3	9.3	96	8.0
11/24/2008	570	4	14.3	19,300	11.4	10.0	104	8.0
11/24/2008	570	1	14.3	19,300	11.4	10.0	104	8.0
1/23/2009	120	3	11.7	22,000	13.2	11.3	114	7.9
1/23/2009	120	1	11.8	22,000	13.2	11.2	113	8.0
1/23/2009	190	10	10.5	23,200	14.1	10.8	106	7.9
1/23/2009	190	1	11.2	21,800	13.1	11.1	110	8.0
1/23/2009	340	39	10.5	25,100	15.3	10.5	104	8.0
1/23/2009	340	30	10.5	25,000	15.2	10.5	104	8.0
1/23/2009	340	20	10.5	24,600	14.9	10.5	103	8.0
1/23/2009	340	10	10.5	22,800	13.8	10.6	104	8.0
1/23/2009	340	1	11.1	21,800	13.1	10.9	108	8.0
1/23/2009	445	33	10.5	25,000	15.2	10.6	105	8.0
1/23/2009	445	30	10.5	25,000	15.2	10.5	104	8.0
1/23/2009	445	10	10.8	22,600	13.6	11.0	107	8.0
1/23/2009	445	1	11.2	21,900	13.2	10.9	108	8.0
1/23/2009	570	6	11.1	22,100	13.3	10.8	107	8.0
1/23/2009	570	1	11.1	22,000	13.3	11.1	109	8.0
3/11/2009	120	1	21.3	23,800	14.4	9.1	112	7.9
3/11/2009	190	6	20.9	24,000	14.6	9.1	111	7.9
3/11/2009	190	1	21.1	23,900	14.4	9.2	114	7.9
3/11/2009	340	37	14.8	38,300	24.4	8.5	99	7.9
3/11/2009	340	30	14.8	37,800	23.9	8.0	92	7.8
3/11/2009	340	20	18.2	27,200	16.7	8.4	96	7.9
3/11/2009	340	10	20.0	24,300	14.8	8.8	106	7.9
3/11/2009	340	1	20.5	23,500	14.2	9.1	110	7.9
3/11/2009	445	37	14.8	38,300	24.3	7.9	91	7.8
3/11/2009	445	30	15.1	37,500	24.0	7.5	87	7.8

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent satura-tion)	pH (standard units)
Station number 294805089335200—MRGO near mile 34 near Hopedale, La.—Continued								
3/11/2009	445	20	18.2	27,600	17.0	8.1	97	7.9
3/11/2009	445	10	20.0	23,900	14.6	8.8	105	7.9
3/11/2009	445	1	20.7	23,200	14.1	9.8	110	7.9
3/11/2009	570	6	20.6	23,900	14.5	9.5	114	7.9
3/11/2009	570	1	20.6	23,900	14.5	9.4	114	7.9
6/10/2009	120	4	27.2	26,300	16.1	2.0	25	7.5
6/10/2009	120	1	30.1	17,600	10.3	7.4	106	7.8
6/10/2009	190	36	25.9	29,500	18.1	.5	9	7.5
6/10/2009	190	30	26.1	29,400	18.1	.6	8	7.4
6/10/2009	190	20	26.2	29,200	18.0	.5	7	7.4
6/10/2009	190	10	26.4	28,500	17.5	.6	8	7.4
6/10/2009	190	5	26.7	26,500	16.2	1.6	20	7.6
6/10/2009	190	1	30.6	18,700	11.1	8.4	121	8.0
6/10/2009	340	29	26.1	29,300	18.1	.5	7	7.5
6/10/2009	340	20	26.2	29,100	18.0	.5	6	7.5
6/10/2009	340	10	26.4	28,500	17.5	.6	8	7.5
6/10/2009	340	5	26.7	26,700	16.4	1.2	17	7.5
6/10/2009	340	1	30.9	19,300	11.3	8.7	125	8.2
6/10/2009	445	6	26.8	27,400	16.8	1.3	17	7.7
6/10/2009	445	1	31.1	19,400	11.4	8.4	121	8.1
6/10/2009	570	4	27.6	25,700	15.6	1.3	18	7.6
6/10/2009	570	1	31.1	19,400	11.5	7.7	111	8.0
7/30/2009	120	26	25.8	47,700	31.0	.2	3	--
7/30/2009	120	20	26.8	47,600	31.0	.1	2	--
7/30/2009	120	10	30.2	41,300	26.5	5.3	82	--
7/30/2009	120	1	30.7	40,200	25.7	6.6	106	--
7/30/2009	190	36	26.0	47,900	31.2	1.9	24	--
7/30/2009	190	30	26.5	48,600	31.7	.5	9	--
7/30/2009	190	20	26.9	47,200	30.7	.2	3	--
7/30/2009	190	10	30.5	40,600	25.9	2.7	42	--
7/30/2009	190	1	30.7	40,100	25.6	6.0	93	--
7/30/2009	340	36	25.8	49,900	32.7	.9	10	--
7/30/2009	340	30	26.5	48,000	31.3	.4	7	--
7/30/2009	340	20	26.9	47,000	30.8	.2	2	--
7/30/2009	340	10	30.8	44,400	28.7	3.6	58	--
7/30/2009	340	1	30.6	39,400	25.1	7.4	115	--
7/30/2009	445	6	30.7	39,400	25.1	7.7	119	--
7/30/2009	445	1	30.9	39,500	25.1	7.8	120	--
7/30/2009	570	4	30.6	38,900	24.7	7.4	114	--
7/30/2009	570	1	30.7	38,600	24.5	7.4	114	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294805089335200—MRGO near mile 34 near Hopedale, La.—Continued								
9/2/2009	120	3	28.9	38,700	24.5	1.3	20	7.8
9/2/2009	120	1	29.6	38,900	24.3	3.0	25	7.7
9/2/2009	190	7	29.0	39,000	24.7	.9	13	7.7
9/2/2009	190	3	29.4	38,000	24.0	4.0	59	7.7
9/2/2009	190	1	29.5	38,000	24.0	4.3	65	7.7
9/2/2009	340	34	27.9	46,500	29.9	.3	5	7.5
9/2/2009	340	30	29.0	41,100	26.2	.2	3	7.5
9/2/2009	340	20	29.1	40,000	25.4	.2	3	7.5
9/2/2009	340	10	29.0	39,100	24.8	.4	5	7.5
9/2/2009	340	5	29.0	38,200	24.2	3.3	48	7.6
9/2/2009	340	1	29.4	37,700	23.8	5.8	86	7.7
9/2/2009	445	35	27.6	46,700	30.2	.2	3	7.5
9/2/2009	445	30	28.7	41,300	26.3	.2	2	7.5
9/2/2009	445	20	29.0	39,900	25.3	.1	2	7.5
9/2/2009	445	10	29.0	39,400	25.0	.2	3	7.5
9/2/2009	445	5	29.0	37,700	23.8	4.5	67	7.7
9/2/2009	445	1	29.3	37,600	23.7	6.2	93	7.7
9/2/2009	570	5	29.2	38,400	24.3	3.9	58	7.6
9/2/2009	570	1	29.6	36,700	23.1	5.9	88	7.7
10/8/2009	120	3.5	29.5	28,200	17.3	5.7	83	7.8
10/8/2009	120	1	29.5	28,300	17.4	5.9	85	7.7
10/8/2009	190	5	29.4	28,100	17.2	5.4	77	7.7
10/8/2009	190	1	29.4	28,100	17.2	5.4	78	7.6
10/8/2009	340	28	27.1	25,800	22.5	1.3	20	7.5
10/8/2009	340	25	26.9	34,400	21.5	2.6	37	7.5
10/8/2009	340	20	27.3	32,000	19.9	3.7	52	7.6
10/8/2009	340	10	29.0	28,500	17.5	5.1	73	7.6
10/8/2009	340	1	29.2	28,300	17.3	5.2	75	7.6
10/8/2009	445	35	28.1	41,900	27.0	.6	8	7.4
10/8/2009	445	30	27.7	37,700	23.8	.3	4	7.5
10/8/2009	445	25	26.9	33,700	21.1	2.8	39	7.6
10/8/2009	445	20	27.7	32,200	20.1	3.7	52	7.6
10/8/2009	445	10	28.8	28,800	17.6	6.1	88	7.6
10/8/2009	445	1	29.0	28,400	17.4	5.2	74	7.6
10/8/2009	570	28	27.3	36,300	22.8	.5	8	7.5
10/8/2009	570	20	27.3	31,800	19.7	3.8	53	7.6
10/8/2009	570	10	28.9	28,800	17.7	6.4	92	7.6
10/8/2009	570	1	29.2	28,500	17.5	5.9	85	7.6
11/6/2009	120	4	19.6	27,600	17.0	7.8	94	9.6
11/6/2009	120	1	19.7	27,600	17.0	7.8	95	9.1

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294805089335200—MRGO near mile 34 near Hopedale, La.—Continued								
11/6/2009	190	6	19.6	27,600	17.0	8.2	99	8.7
11/6/2009	190	1	19.6	27,300	16.8	8.2	98	8.7
11/6/2009	340	35	19.9	34,900	22.0	4.7	59	8.3
11/6/2009	340	30	19.8	34,900	22.0	4.7	59	8.3
11/6/2009	340	20	19.6	29,200	18.1	5.0	61	8.4
11/6/2009	340	10	19.3	27,600	17.0	7.0	84	8.4
11/6/2009	340	1	19.4	26,500	16.3	7.6	90	8.3
11/6/2009	445	30	19.9	31,300	19.5	4.0	49	8.1
11/6/2009	445	20	19.6	29,200	18.1	5.6	69	8.2
11/6/2009	445	10	19.3	27,700	17.1	7.0	84	8.2
11/6/2009	445	1	19.5	26,600	16.3	7.7	93	8.2
11/6/2009	570	5	19.7	26,300	16.1	8.1	97	8.2
11/6/2009	570	1	19.7	26,400	16.2	8.2	98	8.2
Station number 294946089361900—MRGO near Mile 37 near Hopedale, La.								
8/15/2008	80	41	26.1	37,800	23.9	4.9	69	7.7
8/15/2008	80	30	26.2	37,600	23.8	4.9	69	7.7
8/15/2008	80	25	26.2	37,000	23.3	5.0	70	7.8
8/15/2008	80	20	26.7	34,900	22.1	5.3	75	7.8
8/15/2008	80	10	27.5	31,300	19.4	6.0	85	7.8
8/15/2008	80	1	27.8	31,300	19.4	6.4	91	7.8
8/15/2008	150	42	26.0	38,500	24.5	4.7	67	7.7
8/15/2008	150	30	26.0	38,400	24.4	4.8	67	7.7
8/15/2008	150	25	26.2	37,200	23.5	5.0	70	7.8
8/15/2008	150	20	27.0	33,200	20.7	5.6	79	7.8
8/15/2008	150	10	27.4	31,500	19.6	6.0	84	7.8
8/15/2008	150	1	28.0	31,100	19.2	6.6	95	7.9
8/15/2008	250	36	26.2	37,400	23.7	5.1	72	7.8
8/15/2008	250	30	26.2	37,300	23.6	5.1	71	7.8
8/15/2008	250	25	26.2	37,100	23.5	5.1	71	7.8
8/15/2008	250	20	27.3	32,500	20.2	5.8	83	7.8
8/15/2008	250	10	27.6	31,300	19.4	6.3	90	7.9
8/15/2008	250	1	28.0	30,900	19.1	6.9	98	7.9
9/26/2008	80	34	25.8	28,100	17.2	6.1	82	--
9/26/2008	80	15	26.2	21,500	12.8	6.8	91	--
9/26/2008	80	1	26.7	19,300	11.4	7.3	103	--
9/26/2008	150	42	25.7	28,300	17.4	6.4	87	--
9/26/2008	150	30	25.9	26,500	16.2	5.9	80	--
9/26/2008	150	15	26.1	22,200	13.3	6.0	80	--
9/26/2008	150	1	26.7	19,100	11.3	8.0	107	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294946089361900—MRGO near Mile 37 near Hopedale, La.—Continued								
9/26/2008	250	30	26.2	25,800	15.7	6.3	83	--
9/26/2008	250	18	26.3	24,600	14.9	5.5	75	--
9/26/2008	250	10	26.2	21,300	12.7	6.0	81	--
9/26/2008	250	1	26.7	18,700	11.0	8.2	109	--
11/24/2008	80	37	14.9	33,700	21.1	7.2	80	7.8
11/24/2008	80	30	14.6	29,200	18.0	7.5	82	7.8
11/24/2008	80	20	14.1	21,900	13.1	7.9	83	7.9
11/24/2008	80	10	14.1	18,700	11.1	8.9	92	7.9
11/24/2008	80	1	14.2	18,900	11.2	9.5	99	7.9
11/24/2008	150	43	14.9	33,800	21.1	8.0	89	7.8
11/24/2008	150	40	14.8	33,700	21.1	7.7	85	7.8
11/24/2008	150	30	14.7	21,500	12.8	7.6	84	7.8
11/24/2008	150	20	14.2	24,200	14.6	7.8	82	7.9
11/24/2008	150	10	14.1	19,100	11.3	8.6	89	7.9
11/24/2008	150	1	14.0	18,800	11.1	9.3	96	7.9
11/24/2008	250	24	14.7	29,300	18.1	7.9	86	7.8
11/24/2008	250	20	14.5	28,600	17.6	7.8	84	7.8
11/24/2008	250	10	14.0	19,300	11.4	8.7	90	7.9
11/24/2008	250	1	14.0	18,700	11.0	9.5	99	7.9
1/23/2009	80	20	10.5	23,600	14.3	10.7	106	8.0
1/23/2009	80	10	11.4	21,500	13.0	10.9	108	8.0
1/23/2009	80	1	11.5	21,400	12.9	11.1	111	8.1
1/23/2009	150	42	10.5	25,300	15.4	10.3	101	8.0
1/23/2009	150	30	10.5	25,200	15.4	10.2	101	8.0
1/23/2009	150	20	10.6	23,600	14.3	10.4	102	8.0
1/23/2009	150	10	11.2	21,600	13.0	10.9	107	8.0
1/23/2009	150	1	11.4	21,300	12.8	11.1	110	8.1
1/23/2009	250	25	10.4	24,400	14.8	10.4	102	8.0
1/23/2009	250	20	10.4	24,100	14.5	10.3	101	8.0
1/23/2009	250	10	10.6	23,400	14.1	10.4	102	8.0
1/23/2009	250	1	11.2	22,000	13.2	10.7	106	8.0
3/11/2009	80	20	18.0	25,900	15.9	9.1	107	7.5
3/11/2009	80	10	20.1	23,200	14.1	8.5	102	7.5
3/11/2009	80	1	21.4	22,000	13.3	9.0	110	7.7
3/11/2009	150	40	14.9	37,300	23.7	7.9	90	7.5
3/11/2009	150	30	15.1	36,100	22.8	7.5	86	7.5
3/11/2009	150	20	18.8	24,700	15.1	8.5	99	7.7
3/11/2009	150	10	19.9	23,100	14.0	8.7	104	7.7
3/11/2009	150	1	21.2	22,000	13.3	9.1	111	7.8
3/11/2009	250	20	19.3	24,200	14.7	8.9	106	7.8

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294946089361900—MRGO near Mile 37 near Hopedale, La.—Continued								
3/11/2009	250	10	19.9	22,900	13.9	9.0	107	7.8
3/11/2009	250	1	20.9	22,100	13.3	9.4	114	7.9
6/10/2009	80	34	27.3	23,000	13.8	1.8	24	7.4
6/10/2009	80	20	28.8	17,500	10.3	4.7	65	7.5
6/10/2009	80	10	29.4	14,600	8.4	5.9	81	7.6
6/10/2009	80	1	31.5	14,700	8.5	8.3	118	7.9
6/10/2009	150	43	26.6	23,700	14.3	.6	8	7.3
6/10/2009	150	40	26.7	23,500	14.2	.8	10	7.3
6/10/2009	150	30	28.0	22,400	13.4	3.0	41	7.4
6/10/2009	150	20	29.1	17,700	10.4	5.0	70	7.5
6/10/2009	150	10	29.2	14,600	8.4	5.8	79	7.6
6/10/2009	150	1	31.9	14,600	8.4	8.5	120	7.9
6/10/2009	250	36	27.4	23,100	13.9	2.4	82	7.3
6/10/2009	250	30	27.8	22,800	13.8	2.8	38	7.3
6/10/2009	250	20	29.0	18,000	10.6	5.0	70	7.4
6/10/2009	250	10	29.0	14,700	8.5	5.6	76	7.5
6/10/2009	250	1	31.4	14,700	8.5	8.3	118	7.8
7/30/2009	80	10	30.7	15,800	9.2	8.2	116	--
7/30/2009	80	1	31.0	15,600	9.0	9.0	128	--
7/30/2009	150	41	28.2	39,000	24.8	1.4	21	--
7/30/2009	150	40	28.5	37,900	24.1	.2	3	--
7/30/2009	150	30	30.0	21,500	12.8	4.2	62	--
7/30/2009	150	20	30.0	27,000	16.5	5.5	76	--
7/30/2009	150	10	30.8	15,800	9.2	8.6	122	--
7/30/2009	150	1	30.9	14,700	8.5	9.2	130	--
7/30/2009	250	15	30.2	17,100	10.0	5.9	81	--
7/30/2009	250	10	30.6	16,000	9.3	6.5	92	--
7/30/2009	250	1	30.9	16,000	9.3	7.9	113	--
9/2/2009	80	39	29.0	32,200	20.0	.4	6	7.6
9/2/2009	80	30	29.0	24,900	15.1	3.8	53	7.6
9/2/2009	80	20	29.1	18,900	11.1	3.7	51	7.7
9/2/2009	80	10	28.8	17,000	9.9	7.8	107	7.7
9/2/2009	80	1	29.4	17,000	9.9	8.6	118	7.8
9/2/2009	150	42	28.6	35,300	22.1	.4	6	7.6
9/2/2009	150	40	29.0	32,500	20.4	.2	4	7.7
9/2/2009	150	35	29.0	28,300	17.4	2.5	36	7.7
9/2/2009	150	30	29.0	25,400	15.4	3.5	49	7.7
9/2/2009	150	25	29.0	20,700	12.3	4.0	55	7.7
9/2/2009	150	20	28.9	18,900	11.3	1.8	25	7.5
9/2/2009	150	10	28.6	17,000	9.9	8.0	109	7.7

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 294946089361900—MRGO near Mile 37 near Hopedale, La.—Continued								
9/2/2009	150	1	29.4	17,000	9.9	10.7	147	7.9
9/2/2009	250	30	28.9	24,000	14.5	4.1	57	7.9
9/2/2009	250	25	29.0	25,000	12.4	3.6	62	7.7
9/2/2009	250	20	28.7	18,600	11.0	1.9	26	7.6
9/2/2009	250	10	28.6	17,000	9.9	7.6	101	7.7
9/2/2009	250	1	29.7	17,000	9.9	11.7	163	8.0
10/8/2009	80	38	27.6	28,400	17.3	.6	7	7.6
10/8/2009	80	30	28.0	21,000	12.5	3.9	53	7.7
10/8/2009	80	20	27.3	17,900	10.5	4.0	53	7.7
10/8/2009	80	10	28.3	16,900	9.8	5.6	77	7.6
10/8/2009	80	1	28.9	16,200	9.4	5.5	75	7.6
10/8/2009	150	42	27.7	29,600	18.2	.5	7	7.4
10/8/2009	150	40	27.7	29,400	18.1	.3	4	7.4
10/8/2009	150	35	27.8	26,600	16.2	2.9	40	7.5
10/8/2009	150	30	28.0	20,600	12.2	3.9	54	7.5
10/8/2009	150	20	27.1	17,700	10.4	4.0	53	7.6
10/8/2009	150	10	28.3	16,900	9.8	4.4	59	7.6
10/8/2009	150	1	28.8	16,200	9.4	5.5	75	7.6
10/8/2009	250	34	27.6	24,000	14.7	2.5	35	7.3
10/8/2009	250	30	27.8	21,000	12.4	3.7	50	7.4
10/8/2009	250	20	27.7	17,800	10.5	3.8	51	7.5
10/8/2009	250	10	28.6	16,800	9.8	5.5	73	7.5
10/8/2009	250	1	29.0	16,000	9.4	5.4	74	7.5
11/6/2009	80	40	20.2	25,500	15.6	5.1	62	8.0
11/6/2009	80	30	19.8	19,500	11.6	6.6	78	8.1
11/6/2009	80	20	19.6	16,900	10.0	7.5	88	8.1
11/6/2009	80	10	19.7	16,800	9.9	7.6	88	8.1
11/6/2009	80	1	19.9	16,800	9.9	8.0	92	8.1
11/6/2009	150	40	20.3	25,000	15.3	1.2	14	7.9
11/6/2009	150	30	19.7	17,600	10.4	4.5	52	8.0
11/6/2009	150	25	19.6	17,100	10.1	6.9	80	8.0
11/6/2009	150	20	19.6	16,900	10.0	7.4	85	8.0
11/6/2009	150	10	19.7	16,800	9.9	7.7	90	8.0
11/6/2009	150	1	19.9	16,800	9.9	8.0	93	8.0
11/6/2009	250	20	19.6	16,900	9.9	7.7	90	8.0
11/6/2009	250	10	19.6	16,800	9.9	7.8	90	8.0
11/6/2009	250	1	20.0	16,800	9.9	8.4	98	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295157089423200—MRGO near mile 44 near Yscloskey, La.								
8/15/2008	60	8	28.3	30,500	18.9	6.1	87	7.8
8/15/2008	60	1	29.2	30,100	18.6	6.8	99	7.8
8/15/2008	120	37	27.7	31,100	19.3	5.9	84	7.8
8/15/2008	120	30	27.7	31,200	19.3	6.0	84	7.8
8/15/2008	120	25	27.8	31,200	19.3	6.0	85	7.8
8/15/2008	120	20	27.9	31,100	19.2	6.1	87	7.8
8/15/2008	120	10	28.6	30,700	19.0	6.7	97	7.8
8/15/2008	120	1	29.0	29,800	18.4	7.2	103	7.9
8/15/2008	180	40	27.7	31,200	19.3	5.7	81	7.8
8/15/2008	180	30	27.7	31,300	19.4	5.7	81	7.8
8/15/2008	180	25	27.7	31,300	19.4	5.7	81	7.8
8/15/2008	180	20	27.7	31,100	19.3	5.6	79	7.8
8/15/2008	180	10	28.5	30,600	18.9	6.1	88	7.8
8/15/2008	180	1	29.0	30,200	18.5	7.1	102	7.9
8/15/2008	240	29	27.7	31,200	19.3	5.5	78	7.8
8/15/2008	240	25	27.7	31,200	19.4	5.5	78	7.8
8/15/2008	240	20	27.7	31,100	19.3	5.5	78	7.8
8/15/2008	240	10	28.2	30,700	18.9	5.8	83	7.8
8/15/2008	240	1	29.1	29,600	18.3	6.8	99	7.9
8/15/2008	300	19	27.8	31,000	19.2	5.6	79	7.8
8/15/2008	300	10	28.6	30,500	18.8	6.0	87	7.8
8/15/2008	300	1	29.1	29,200	18.0	7.2	105	7.9
9/26/2008	60	8	25.6	16,900	9.8	6.5	85	--
9/26/2008	60	1	26.8	16,800	9.8	6.9	93	--
9/26/2008	120	33	25.9	19,900	11.8	5.5	72	--
9/26/2008	120	15	25.4	17,000	10.0	6.1	78	--
9/26/2008	120	1	26.9	16,800	9.8	7.6	102	--
9/26/2008	180	41	25.4	19,700	11.7	6.0	79	--
9/26/2008	180	20	25.5	17,800	10.5	5.9	76	--
9/26/2008	180	10	25.6	17,000	9.9	6.3	82	--
9/26/2008	180	1	27.0	16,700	9.8	8.0	108	--
9/26/2008	240	26	26.2	20,100	11.9	5.2	69	--
9/26/2008	240	15	26.6	17,300	10.1	5.4	71	--
9/26/2008	240	1	27.4	16,700	9.8	8.1	108	--
9/26/2008	300	7	26.1	16,700	9.8	7.6	99	--
9/26/2008	300	1	27.4	16,700	9.8	8.9	119	--
11/24/2008	60	6	14.2	18,300	10.8	9.4	97	8.0
11/24/2008	60	1	14.3	18,200	10.7	9.6	99	7.9
11/24/2008	120	24	13.8	18,800	11.1	9.5	98	7.9
11/24/2008	120	20	13.8	18,700	11.0	8.5	87	7.9

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295157089423200—MRGO near mile 44 near Yscloskey, La.—Continued								
11/24/2008	120	10	14.0	18,300	10.8	9.4	97	7.9
11/24/2008	120	1	14.2	18,200	10.7	9.4	98	7.9
11/24/2008	180	36	15.1	28,700	17.7	7.0	79	7.7
11/24/2008	180	30	14.9	27,300	16.7	7.1	78	7.7
11/24/2008	180	20	14.0	22,100	13.2	7.7	80	7.8
11/24/2008	180	10	13.9	21,400	12.8	8.4	89	7.8
11/24/2008	180	1	13.8	18,300	10.8	9.5	98	7.9
11/24/2008	240	38	15.2	28,800	17.7	6.8	74	7.7
11/24/2008	240	30	15.0	28,400	17.4	5.9	65	7.7
11/24/2008	240	20	14.2	24,300	14.7	7.0	75	7.8
11/24/2008	240	10	13.6	18,800	11.1	8.6	88	7.9
11/24/2008	240	1	13.8	18,200	10.7	9.6	98	7.9
11/24/2008	300	8	13.8	18,400	10.8	9.8	100	7.9
11/24/2008	300	1	14.0	18,400	10.8	9.8	101	8.0
1/23/2009	90	17	10.6	23,000	13.9	10.6	104	8.0
1/23/2009	90	10	11.2	21,500	12.9	11.2	111	8.1
1/23/2009	90	1	11.6	21,300	12.8	11.7	116	8.1
1/23/2009	180	41	10.7	26,500	16.1	9.9	99	8.0
1/23/2009	180	30	10.5	25,200	15.5	10.2	100	8.0
1/23/2009	180	20	10.5	23,500	14.2	10.5	103	8.0
1/23/2009	180	10	10.8	21,400	12.8	11.2	110	8.1
1/23/2009	180	1	11.4	21,000	12.5	11.7	116	8.1
1/23/2009	270	6	11.9	21,000	12.6	11.8	117	8.2
1/23/2009	270	1	11.1	21,000	12.6	11.9	119	8.2
3/11/2009	90	20	16.8	23,700	14.4	9.7	110	7.7
3/11/2009	90	10	19.3	21,500	12.9	9.4	111	7.8
3/11/2009	90	1	20.3	21,400	12.9	10.0	118	7.9
3/11/2009	180	40	15.6	32,400	20.3	8.3	96	7.7
3/11/2009	180	30	15.7	32,000	20.0	8.1	92	7.7
3/11/2009	180	20	16.2	24,000	14.6	8.6	96	7.7
3/11/2009	180	10	19.3	21,500	12.9	9.1	106	7.8
3/11/2009	180	1	20.2	21,400	12.9	9.7	116	8.0
3/11/2009	270	27	15.6	31,800	19.9	8.3	94	7.8
3/11/2009	270	20	16.8	24,000	14.6	8.7	98	7.8
3/11/2009	270	10	19.3	21,500	13.0	9.1	107	7.9
3/11/2009	270	1	19.9	21,400	12.9	9.7	115	8.0
6/10/2009	90	23	27.2	14,000	8.1	4.8	63	7.7
6/10/2009	90	20	27.2	13,400	7.7	5.0	66	7.6
6/10/2009	90	10	28.5	13,100	7.5	6.8	89	7.7
6/10/2009	90	1	30.3	13,000	7.4	8.8	122	8.0

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295157089423200—MRGO near mile 44 near Yscloskey, La.—Continued								
6/10/2009	180	35	26.8	22,400	13.5	1.0	13	7.6
6/10/2009	180	30	28.0	19,900	12.7	3.5	35	7.5
6/10/2009	180	20	27.3	13,600	7.8	4.8	64	7.6
6/10/2009	180	10	28.5	13,100	7.5	6.7	90	7.7
6/10/2009	180	1	30.8	13,000	7.4	9.5	132	8.3
6/10/2009	270	20	27.3	13,700	7.9	4.8	62	7.7
6/10/2009	270	10	28.3	13,100	7.5	6.3	85	7.7
6/10/2009	270	1	30.9	13,000	7.4	9.3	130	8.2
7/30/2009	90	8	29.8	16,200	9.4	5.3	72	--
7/30/2009	90	1	30.5	15,800	9.2	7.3	104	--
7/30/2009	180	35	29.4	31,000	19.2	1.8	26	--
7/30/2009	180	30	29.5	24,500	14.8	1.6	23	--
7/30/2009	180	20	29.7	19,400	11.5	2.1	29	--
7/30/2009	180	10	29.8	17,000	9.9	2.1	30	--
7/30/2009	180	1	30.6	15,700	9.1	5.2	73	--
7/30/2009	270	30	29.5	29,700	18.3	.9	13	--
7/30/2009	270	20	29.7	18,700	11.0	1.9	27	--
7/30/2009	270	10	29.8	16,000	9.3	1.9	26	--
7/30/2009	270	1	30.5	15,700	9.1	5	70	--
9/2/2009	90	25	28.4	18,900	11.2	3	39	7.7
9/2/2009	90	20	27.9	16,900	9.9	5.5	74	7.7
9/2/2009	90	10	28.2	16,700	9.7	6.7	91	7.7
9/2/2009	90	1	29.6	16,700	9.7	9.7	135	7.9
9/2/2009	180	36	29.4	26,100	16.9	.3	5	7.6
9/2/2009	180	30	29.3	24,800	15.0	.3	4	7.6
9/2/2009	180	25	28.4	19,000	11.4	3.1	42	7.6
9/2/2009	180	20	28.0	16,900	9.9	5.6	75	7.6
9/2/2009	180	10	28.4	16,700	9.7	7	96	7.6
9/2/2009	180	1	29.8	16,700	9.7	9.3	130	7.8
9/2/2009	270	24	28.1	17,700	10.4	4.3	59	7.7
9/2/2009	270	20	27.9	17,000	10.0	4.4	59	7.7
9/2/2009	270	10	28.2	16,700	9.7	6.8	92	7.7
9/2/2009	270	1	30.0	16,700	9.7	9.6	135	7.9
10/8/2009	90	7	29.0	16,700	9.8	8.1	110	7.8
10/8/2009	90	1	29.0	16,700	9.8	8	110	7.8
10/8/2009	180	35	27.1	22,700	13.7	.7	9	7.5
10/8/2009	180	30	27.0	22,400	13.4	1.3	19	7.5
10/8/2009	180	25	27.5	18,900	11.2	3.8	51	7.5
10/8/2009	180	20	27.7	18,000	10.7	4.8	65	7.5
10/8/2009	180	10	28.3	16,900	9.9	6.7	91	7.6

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295157089423200—MRGO near mile 44 near Yscloskey, La.—Continued								
10/8/2009	180	1	28.9	16,800	9.8	7.7	105	7.6
10/8/2009	270	30	27.1	22,200	13.4	1.1	14	7.5
10/8/2009	270	20	27.7	17,900	10.6	5.1	69	7.5
10/8/2009	270	10	28.2	16,900	9.9	6.3	86	7.6
10/8/2009	270	1	28.6	16,800	9.8	7.4	101	7.6
11/6/2009	90	20	19.4	15,400	9.0	9.0	88	8.3
11/6/2009	90	10	19.6	15,400	9.0	9.0	94	8.2
11/6/2009	90	1	19.6	15,200	8.9	11.7	95	8.2
11/6/2009	180	30	19.9	19,600	11.7	9.1	78	8.0
11/6/2009	180	20	19.7	15,400	9.1	9.0	93	8.0
11/6/2009	180	10	19.8	15,300	9.0	8.9	97	8.0
11/6/2009	180	1	19.8	15,300	8.9	9.6	99	8.0
11/6/2009	270	22	19.5	16,300	9.6	9.0	74	7.9
11/6/2009	270	20	19.5	15,400	9.0	9.0	83	7.9
11/6/2009	270	10	19.6	15,300	9.0	9.0	90	7.9
11/6/2009	270	1	19.8	15,100	8.8	8.8	100	7.9
Station number 295556089494400—MRGO near mile 52 near Violet, La.								
8/15/2008	80	36	28.1	32,000	19.9	5.0	71	7.8
8/15/2008	80	30	28.1	31,100	19.3	5.4	77	7.8
8/15/2008	80	25	28.2	31,000	19.2	5.6	80	7.8
8/15/2008	80	20	28.3	30,800	19.1	5.8	83	7.8
8/15/2008	80	10	28.3	30,800	19.1	5.9	85	7.8
8/15/2008	80	1	28.6	30,800	19.0	6.2	89	7.8
8/15/2008	160	35	18.1	32,000	19.9	4.6	66	7.8
8/15/2008	160	30	28.1	31,700	19.7	4.8	68	7.8
8/15/2008	160	25	28.1	31,500	19.5	4.9	70	7.8
8/15/2008	160	20	28.2	31,100	19.2	5.2	74	7.8
8/15/2008	160	10	28.3	30,700	19.0	5.5	80	7.8
8/15/2008	160	1	28.7	30,500	18.8	6.3	92	7.9
8/15/2008	240	22	28.4	31,200	19.3	5.1	72	7.8
8/15/2008	240	10	28.2	31,100	19.3	5.3	75	7.8
8/15/2008	240	1	28.7	30,100	19.0	6.2	89	7.8
9/26/2008	80	31	25.5	17,300	10.1	5.4	70	--
9/26/2008	80	15	25.0	15,600	9.0	5.8	76	--
9/26/2008	80	1	26.4	15,500	9.0	8.4	108	--
9/26/2008	160	37	25.3	20,300	11.6	3.3	44	--
9/26/2008	160	25	25.2	16,100	9.0	4.3	60	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295556089494400—MRGO near mile 52 near Violet, La.—Continued								
9/26/2008	160	10	25.2	15,500	8.6	7.2	92	--
9/26/2008	160	1	26.5	15,500	8.6	8.2	103	--
9/26/2008	240	19	24.7	15,800	8.8	6.6	84	--
9/26/2008	240	10	25.2	15,600	8.6	6.8	87	--
9/26/2008	240	1	27.8	15,500	8.6	9.3	125	--
11/24/2008	80	32	14.5	21,700	13.0	8.8	93	7.8
11/24/2008	80	20	13.8	19,000	11.2	9.7	100	7.9
11/24/2008	80	10	13.8	18,200	10.7	9.7	99	7.9
11/24/2008	80	1	13.9	17,900	10.5	9.9	102	8.0
11/24/2008	160	34	15.1	25,400	14.8	7.3	78	7.7
11/24/2008	160	30	14.4	22,700	13.1	8.3	87	7.8
11/24/2008	160	20	14.2	20,900	12.0	8.5	89	7.8
11/24/2008	160	10	14.1	19,200	10.9	9.0	92	7.9
11/24/2008	160	1	13.9	17,900	10.1	9.7	100	7.9
11/24/2008	240	25	14.0	19,700	11.2	8.9	92	7.8
11/24/2008	240	20	14.0	18,800	10.6	9.0	93	7.8
11/24/2008	240	10	14.0	18,700	10.5	9.0	93	7.8
11/24/2008	240	1	13.9	17,900	10.1	9.6	99	7.9
1/23/2009	80	27	10.7	25,300	15.2	10.0	99	7.9
1/23/2009	80	20	10.5	20,300	12.3	10.4	101	8.0
1/23/2009	80	10	10.8	17,500	10.3	10.9	105	8.0
1/23/2009	80	1	11.5	16,400	9.7	11.4	111	8.1
1/23/2009	160	35	10.9	27,500	16.9	9.6	97	7.7
1/23/2009	160	30	10.7	26,100	15.8	9.6	95	7.9
1/23/2009	160	20	10.6	21,700	13.2	10.3	101	8.0
1/23/2009	160	10	10.8	17,600	10.4	11.0	105	8.0
1/23/2009	160	1	11.4	16,700	9.8	11.2	109	8.1
1/23/2009	240	12	10.9	18,400	10.9	11.1	107	8.0
1/23/2009	240	1	11.4	16,700	9.8	11.4	111	8.1
3/11/2009	80	30	16.4	26,500	16.3	7.5	85	7.6
3/11/2009	80	20	17.5	22,100	13.3	8.7	98	7.7
3/11/2009	80	10	18.1	17,100	10.1	9.3	104	7.7
3/11/2009	80	1	19.7	15,500	9.1	9.5	109	7.8
3/11/2009	160	34	16.3	26,900	16.6	8.5	96	7.4
3/11/2009	160	30	16.5	26,500	16.4	8.4	95	8.4
3/11/2009	160	20	17.2	22,900	14.0	8.8	98	7.5
3/11/2009	160	10	18.2	16,700	9.8	9.4	105	7.6
3/11/2009	160	1	19.6	15,500	9.1	9.4	109	7.7
3/11/2009	240	20	17.4	20,200	12.0	8.9	101	7.7
3/11/2009	240	10	18.3	16,600	9.8	9.4	105	7.8

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295556089494400—MRGO near mile 52 near Violet, La.—Continued								
3/11/2009	240	1	19.5	15,600	9.1	9.4	108	7.8
6/10/2009	80	18	28.9	12,800	7.3	6.7	90	7.7
6/10/2009	80	10	29.3	12,600	7.2	7.1	95	7.7
6/10/2009	80	1	30.0	12,100	6.9	8.3	114	7.9
6/10/2009	160	34	27.1	20,500	12.2	1.9	26	7.4
6/10/2009	160	30	27.5	19,700	11.8	2.9	35	7.4
6/10/2009	160	20	28.4	13,100	7.5	5.6	76	7.6
6/10/2009	160	10	29.2	12,700	7.3	6.9	94	7.7
6/10/2009	160	1	30.1	11,900	6.8	8.1	112	7.9
6/10/2009	240	32	27.0	18,100	10.5	2.8	37	7.6
6/10/2009	240	20	28.4	13,100	7.5	5.7	76	7.6
6/10/2009	240	10	29.3	12,600	7.2	7.1	95	7.7
6/10/2009	240	1	30.2	12,000	6.8	8.3	113	8.0
7/30/2009	80	20	29.5	17,200	10.1	3.6	50	--
7/30/2009	80	10	30.1	15,800	9.2	5.1	72	--
7/30/2009	80	1	30.7	15,300	8.9	7.2	102	--
7/30/2009	160	30	29.9	21,800	13.0	1.5	22	--
7/30/2009	160	20	29.5	17,200	10.0	2.8	40	--
7/30/2009	160	10	29.8	16,100	9.4	4.1	57	--
7/30/2009	160	1	30.8	15,200	8.8	6.6	93	--
7/30/2009	240	22	29.5	17,000	10.0	3.4	47	--
7/30/2009	240	20	29.5	17,000	10.0	3.3	46	--
7/30/2009	240	10	29.5	16,600	9.7	3.9	54	--
7/30/2009	240	1	30.9	14,900	8.6	7.3	103	--
9/2/2009	80	32	29.2	24,500	14.8	.6	7	7.6
9/2/2009	80	30	28.6	19,600	11.6	2.6	37	7.6
9/2/2009	80	20	28.1	18,100	10.7	6.5	87	7.6
9/2/2009	80	10	28.6	17,800	10.5	8.6	117	7.7
9/2/2009	80	1	29.0	17,100	10.0	12.0	165	8.0
9/2/2009	160	33	29.2	24,700	14.9	.5	7	7.8
9/2/2009	160	30	28.1	19,000	11.3	2.5	35	7.7
9/2/2009	160	25	28.2	18,600	10.9	5.8	79	7.7
9/2/2009	160	20	28.2	18,500	10.9	6.0	82	7.7
9/2/2009	160	10	28.4	18,000	10.5	7.4	100	7.7
9/2/2009	160	1	29.8	16,900	9.9	15.6	218	8.3
9/2/2009	240	20	28.0	18,100	10.6	6.6	90	8.1
9/2/2009	240	10	27.9	17,500	10.3	6.9	94	8.0
9/2/2009	240	1	30.1	16,700	9.7	16.0	224	8.0
10/8/2009	80	30	26.9	17,800	10.4	2.8	38	7.5
10/8/2009	80	20	27.7	16,200	9.4	4.4	58	7.5

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295556089494400—MRGO near mile 52 near Violet, La.—Continued								
10/8/2009	80	10	28.8	15,800	9.2	6.4	87	7.5
10/8/2009	80	1	29.0	15,600	9.1	6.3	86	7.5
10/8/2009	160	32	26.9	18,600	11.1	1.0	14	7.4
10/8/2009	160	30	26.9	17,700	10.4	2.9	39	7.4
10/8/2009	160	20	27.8	16,200	9.4	5.1	69	7.5
10/8/2009	160	10	28.7	15,800	9.2	5.6	76	7.5
10/8/2009	160	1	29.2	14,100	8.2	5.3	72	7.5
10/8/2009	240	19	28.4	16,100	9.3	6.0	81	7.4
10/8/2009	240	10	28.6	15,900	9.2	6.7	92	7.5
10/8/2009	240	1	29.4	13,600	7.8	5.4	73	7.5
11/13/2009	80	32	18.5	15,100	8.8	7.7	86	7.8
11/13/2009	80	30	18.5	15,200	8.9	7.7	86	7.7
11/13/2009	80	30	18.6	16,000	9.4	7.8	88	7.7
11/13/2009	80	10	18.7	15,100	8.8	8.0	91	7.7
11/13/2009	80	1	18.5	11,700	6.7	8.5	95	7.8
11/13/2009	160	35	18.5	16,100	9.5	7.6	85	7.6
11/13/2009	160	30	18.5	16,100	9.5	7.6	86	7.6
11/13/2009	160	20	18.6	16,000	9.4	7.8	88	7.6
11/13/2009	160	10	18.5	14,700	8.6	8.1	91	7.7
11/13/2009	160	1	18.8	11,400	6.5	8.5	95	7.7
11/13/2009	240	17	18.7	15,200	8.9	.9	10	7.4
11/13/2009	240	15	18.7	15,800	9.3	6.3	71	7.5
11/13/2009	240	10	18.6	14,800	8.6	7.8	87	7.6
11/13/2009	240	1	18.8	10,300	5.8	8.0	89	7.7
Station number 295709089511200—MRGO near mile 54 near Violet, La.								
9/26/2008	80	11	24.7	15,500	9.0	7.7	98	--
9/26/2008	80	1	26.0	15,300	8.9	9.5	123	--
9/26/2008	160	37	25.8	15,700	9.1	4.5	58	--
9/26/2008	160	30	24.6	16,000	9.3	6.6	82	--
9/26/2008	160	15	24.5	15,600	9.0	7.6	97	--
9/26/2008	160	1	25.8	15,400	8.9	9.2	117	--
9/26/2008	240	25	24.5	15,600	9.0	7.5	95	--
9/26/2008	240	15	24.7	15,600	9.0	8.4	108	--
9/26/2008	240	1	27.3	15,400	8.9	11.2	150	--
11/24/2008	90	5	13.8	17,900	10.5	8.4	86	7.9
11/24/2008	90	1	14.0	17,700	10.4	9.3	98	7.9
11/24/2008	170	19	13.9	19,100	10.6	9.4	98	7.9
11/24/2008	170	10	13.8	18,400	10.5	9.7	99	7.9
11/24/2008	170	1	13.9	18,000	10.1	10.0	103	8.0
11/24/2008	260	36	15.9	28,200	16.6	6.4	68	7.6

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295709089511200—MRGO near mile 54 near Violet, La.—Continued								
11/24/2008	260	30	14.8	22,100	12.7	7.2	79	7.8
11/24/2008	260	20	14.0	21,200	12.1	9.0	96	7.8
11/24/2008	260	10	13.8	18,900	10.7	9.6	99	7.9
11/24/2008	260	1	13.9	18,100	10.2	10.1	104	8.0
11/24/2008	335	36	15.9	28,300	16.6	6.3	70	7.6
11/24/2008	335	30	14.5	21,700	12.4	7.4	78	7.7
11/24/2008	335	20	14.0	19,500	11.0	9.3	96	7.9
11/24/2008	335	10	13.7	18,800	10.6	9.7	99	7.9
11/24/2008	335	1	13.8	18,100	10.2	10.1	104	7.9
11/24/2008	425	12	13.7	18,600	10.5	9.8	100	7.9
11/24/2008	425	1	14.0	18,000	10.1	9.8	101	7.9
1/23/2009	80	10	11.5	17,500	10.3	11.1	108	8.0
1/23/2009	80	1	11.6	17,500	10.3	11.2	109	8.1
1/23/2009	160	36	11.0	28,100	17.3	9.6	98	7.9
1/23/2009	160	30	10.8	27,100	16.6	9.3	93	7.9
1/23/2009	160	20	10.5	23,900	14.5	9.9	98	7.9
1/23/2009	160	10	10.9	17,900	10.5	10.6	104	8.0
1/23/2009	160	1	11.4	17,700	10.5	11.0	108	8.0
1/23/2009	240	18	10.8	20,100	12.2	10.6	103	8.0
1/23/2009	240	10	11.3	17,800	10.6	10.9	106	8.0
1/23/2009	240	1	11.5	17,800	10.5	11.1	108	8.0
3/11/2009	90	9	18.7	16,100	9.4	9.5	108	7.7
3/11/2009	90	1	19.5	15,800	9.3	10.3	118	7.9
3/11/2009	180	35	16.3	20,000	11.9	8.4	92	7.1
3/11/2009	180	30	16.4	23,700	14.4	8.2	91	7.3
3/11/2009	180	20	17.5	18,300	10.9	8.7	97	7.4
3/11/2009	180	10	18.7	16,000	9.4	9.6	108	7.6
3/11/2009	180	1	19.7	15,800	9.3	10.4	120	7.9
3/11/2009	270	17	17.8	16,900	9.9	9.3	104	7.7
3/11/2009	270	10	19.4	16,000	9.4	9.8	113	7.8
3/11/2009	270	1	19.9	15,800	9.2	10.9	125	8.1
6/10/2009	60	10	28.5	12,700	7.2	6.6	89	7.7
6/10/2009	60	1	29.1	12,400	7.1	8.0	108	7.8
6/10/2009	120	31	28.2	13,000	7.4	5.8	77	7.7
6/10/2009	120	20	28.5	12,800	7.3	6.4	87	7.7
6/10/2009	120	10	28.6	12,700	7.2	6.6	89	7.7
6/10/2009	120	1	29.5	12,000	6.8	7.7	106	7.8
6/10/2009	180	35	27.5	14,000	8.0	4.5	64	7.7
6/10/2009	180	30	28.1	13,300	7.6	5.6	75	7.7

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 295709089511200—MRGO near mile 54 near Violet, La.—Continued								
6/10/2009	180	20	28.4	12,800	7.3	6.2	83	7.6
6/10/2009	180	10	28.7	12,500	7.1	6.7	91	7.7
6/10/2009	180	1	29.8	11,800	6.7	7.9	108	7.8
6/10/2009	240	15	28.5	12,600	7.2	5.9	79	7.7
6/10/2009	240	10	28.7	12,500	7.1	6.0	84	7.7
6/10/2009	240	1	29.4	11,900	6.8	7.7	105	7.8
6/10/2009	300	8	29.6	11,800	6.7	8.9	110	8.0
6/10/2009	300	1	29.6	11,800	6.7	8.1	110	8.0
7/30/2009	80	20	29.6	16,900	9.8	4.9	67	--
7/30/2009	80	10	29.8	16,000	9.3	5.8	81	--
7/30/2009	80	1	30.6	14,800	8.5	8.1	113	--
7/30/2009	160	30	29.9	21,800	13.0	1.5	22	--
7/30/2009	160	20	29.5	17,200	10.0	2.8	40	--
7/30/2009	160	10	29.8	16,100	9.4	4.1	57	--
7/30/2009	160	1	30.8	15,200	8.8	6.6	93	--
7/30/2009	240	10	29.8	16,300	9.5	6.0	84	--
7/30/2009	240	1	30.8	14,400	8.3	8.8	125	--
9/2/2009	80	9	28.4	17,800	10.4	7.7	105	8.0
9/2/2009	80	1	28.6	17,700	10.4	8.5	117	8.0
9/2/2009	160	35	28.1	17,900	10.5	6.9	94	7.9
9/2/2009	160	30	28.1	17,800	10.5	7.0	95	7.9
9/2/2009	160	20	28.3	17,800	10.5	7.4	101	7.9
9/2/2009	160	10	28.4	17,700	10.4	7.8	105	7.9
9/2/2009	160	1	28.5	17,600	10.3	8.5	116	7.9
9/2/2009	240	32	28.0	17,900	10.5	6.6	89	8.0
9/2/2009	240	30	28.0	17,800	10.5	6.7	91	7.9
9/2/2009	240	20	28.1	17,800	10.5	6.8	92	7.9
9/2/2009	240	10	28.2	17,700	10.4	7.0	92	7.8
9/2/2009	240	1	27.8	16,100	9.3	13.3	185	8.2
10/8/2009	80	8	28.3	15,300	8.8	4.8	65	7.7
10/8/2009	80	1	29.0	13,900	8.0	8.2	112	7.7
10/8/2009	160	34	27.1	17,900	10.5	1.2	15	7.5
10/8/2009	160	30	27.0	17,400	10.2	2.0	26	7.5
10/8/2009	160	20	27.7	16,000	9.4	4.5	60	7.5
10/8/2009	160	10	27.7	15,400	9.0	4.8	64	7.5
10/8/2009	160	1	29.0	14,100	8.1	7.4	101	7.5
10/8/2009	240	25	27.5	16,700	9.8	2.8	37	7.5
10/8/2009	240	20	27.5	16,200	9.4	4.4	58	7.5
10/8/2009	240	10	27.8	15,400	8.9	4.7	63	7.5
10/8/2009	240	1	28.6	14,400	8.3	6.1	82	7.5

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent satura-tion)	pH (standard units)
Station number 295709089511200—MRGO near mile 54 near Violet, La.—Continued								
11/13/2009	80	15	18.8	14,100	8.2	2.3	26	7.6
11/13/2009	80	10	18.9	14,200	8.3	8.8	99	7.7
11/13/2009	80	1	19.1	13,200	7.6	9.5	107	7.8
11/13/2009	160	36	18.7	15,700	9.2	.9	10	7.6
11/13/2009	160	30	18.6	15,900	9.3	6.9	78	7.7
11/13/2009	160	20	18.6	14,900	8.7	8.0	90	7.7
11/13/2009	160	10	18.9	14,000	8.1	8.9	101	7.8
11/13/2009	240	22	18.5	15,000	8.8	6.8	77	7.7
11/13/2009	240	20	18.4	14,800	8.6	7.9	88	7.7
11/13/2009	240	10	18.6	13,800	8.0	8.5	96	7.8
11/13/2009	240	1	19.1	12,900	7.5	9.4	106	7.8
Station number 3000189089551200—MRGO near mile 59 near Michoud, La.								
8/15/2008	80	27	28.5	31,600	19.6	4.1	59	7.7
8/15/2008	80	20	28.8	29,100	17.7	4.5	65	7.7
8/15/2008	80	10	29.2	26,600	16.2	5.9	84	7.8
8/15/2008	80	1	30.7	22,700	13.6	11.0	162	8.3
8/15/2008	160	42	28.5	32,000	19.9	4.2	60	7.7
8/15/2008	160	30	28.5	31,800	19.7	4.4	64	7.7
8/15/2008	160	25	28.6	30,900	19.1	4.7	69	7.7
8/15/2008	160	20	28.9	29,500	18.1	5.4	78	7.8
8/15/2008	160	10	29.5	26,200	16.0	6.8	98	7.9
8/15/2008	160	1	30.6	22,700	13.6	11.6	167	8.3
8/15/2008	240	29	28.5	31,900	19.8	4.2	61	7.7
8/15/2008	240	20	28.9	29,200	17.9	5.2	74	7.7
8/15/2008	240	10	29.4	26,500	16.1	6.3	91	7.8
8/15/2008	240	1	30.2	23,000	13.8	9.6	139	8.1
9/26/2008	80	34	25.9	15,400	8.6	5.9	76	--
9/26/2008	80	15	26.2	14,900	8.2	6.1	79	--
9/26/2008	80	5	26.8	14,600	8.0	6.6	87	--
9/26/2008	80	1	28.4	14,400	7.9	7.1	94	--
9/26/2008	160	43	25.8	15,700	8.7	5.8	75	--
9/26/2008	160	20	26.2	15,200	8.4	5.8	78	--
9/26/2008	160	10	26.8	14,700	8.1	6.7	88	--
9/26/2008	160	1	28.7	14,500	8.0	7.0	95	--
9/26/2008	240	27	26.1	15,100	8.4	6.3	82	--
9/26/2008	240	15	26.1	14,700	8.1	5.8	75	--
9/26/2008	240	1	29.3	14,200	7.8	7.6	104	--

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 3000189089551200—MRGO near mile 59 near Michoud, La.—Continued								
11/24/2008	80	26	14.6	19,600	11.6	8.6	90	7.8
11/24/2008	80	20	14.4	19,000	11.2	9.2	96	7.9
11/24/2008	80	10	14.5	19,000	11.2	9.5	99	7.9
11/24/2008	80	1	14.6	18,900	11.2	9.6	101	7.9
11/24/2008	160	43	14.7	21,000	12.0	7.5	82	7.7
11/24/2008	160	30	14.6	19,700	11.2	9.3	98	7.9
11/24/2008	160	20	14.6	19,700	11.2	9.4	98	7.9
11/24/2008	160	10	14.7	18,700	10.5	9.6	100	7.9
11/24/2008	160	1	15.8	18,400	10.4	9.9	106	7.9
11/24/2008	240	28	14.6	20,500	11.7	8.9	94	7.8
11/24/2008	240	20	14.5	19,900	11.3	9.1	95	7.9
11/24/2008	240	10	14.7	18,700	10.5	9.4	99	7.9
11/24/2008	240	1	16.0	18,400	10.4	10.0	107	7.9
1/23/2009	80	33	11.5	27,800	17.1	8.8	90	7.8
1/23/2009	80	30	11.3	27,100	16.6	8.4	84	7.8
1/23/2009	80	20	12.4	17,700	10.5	9.5	95	7.9
1/23/2009	80	10	12.7	17,300	10.3	10.0	100	7.9
1/23/2009	80	1	12.8	17,300	10.2	10.2	102	7.9
1/23/2009	160	41	12.0	29,200	18.1	7.8	82	7.8
1/23/2009	160	30	11.2	26,900	16.6	7.9	81	7.8
1/23/2009	160	20	12.5	17,600	10.4	9.5	93	7.9
1/23/2009	160	10	12.6	17,400	10.3	10.0	100	7.9
1/23/2009	160	1	12.8	17,300	10.2	10.2	102	7.9
1/23/2009	240	34	11.7	28,800	17.8	8.0	83	7.8
1/23/2009	240	30	11.4	27,900	17.1	7.9	81	7.8
1/23/2009	240	20	11.1	20,400	12.2	8.9	87	7.9
1/23/2009	240	10	12.4	17,600	10.4	9.8	98	7.9
1/23/2009	240	1	13.0	17,300	10.2	10.3	104	8.0
3/11/2009	80	27	16.3	21,600	13.1	8.2	89	7.6
3/11/2009	80	20	16.6	17,200	10.3	9.2	100	7.7
3/11/2009	80	10	18.2	14,100	8.1	10.7	118	8.1
3/11/2009	80	1	19.7	14,000	8.1	11.8	134	8.4
3/11/2009	160	42	16.2	22,000	13.3	8.8	97	7.6
3/11/2009	160	30	16.2	21,900	13.2	8.7	96	7.6
3/11/2009	160	20	16.4	17,500	10.6	9.2	102	7.6
3/11/2009	160	10	18.0	14,100	8.2	10.8	120	8.0
3/11/2009	160	1	19.5	17,000	8.1	11.5	130	8.2
3/11/2009	240	25	16.3	21,000	12.8	9.1	102	7.7
3/11/2009	240	20	16.5	17,100	10.0	9.3	101	7.8
3/11/2009	240	10	18.3	14,400	8.4	10.5	119	8.1

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 3000189089551200—MRGO near mile 59 near Michoud, La.—Continued								
3/11/2009	240	1	20.4	14,300	8.3	11.4	131	8.3
7/30/2009	80	30	29.6	15,600	9.0	5.0	69	--
7/30/2009	80	20	29.9	14,900	8.6	4.5	62	--
7/30/2009	80	10	30.6	14,100	8.1	6.4	89	--
7/30/2009	80	1	31.0	14,000	8.0	6.8	96	--
7/30/2009	160	40	29.2	17,300	10.1	2.8	38	--
7/30/2009	160	30	29.6	16,200	9.4	3.6	50	--
7/30/2009	160	20	30.0	14,700	8.5	4.5	63	--
7/30/2009	160	10	30.9	14,000	8.0	7.0	98	--
7/30/2009	160	1	30.9	14,000	8.0	7.1	99	--
7/30/2009	240	20	30.0	14,700	8.5	4.9	68	--
7/30/2009	240	10	30.9	14,300	8.2	6.2	87	--
7/30/2009	240	1	30.9	14,000	8.1	7.2	101	--
9/2/2009	80	29	28.0	17,200	10.1	5.2	71	7.9
9/2/2009	80	20	28.4	16,600	9.7	6.0	82	7.8
9/2/2009	80	10	28.7	15,400	8.9	6.2	84	7.8
9/2/2009	80	1	30.7	15,200	8.8	9.8	138	8.0
9/2/2009	160	40	28.1	17,400	10.2	5.0	68	7.8
9/2/2009	160	30	28.1	17,400	10.2	5.2	70	7.8
9/2/2009	160	20	28.5	16,600	9.7	6.1	84	7.7
9/2/2009	160	10	29.0	15,400	9.9	7.0	96	7.8
9/2/2009	160	1	30.9	15,100	8.7	9.7	137	8.0
9/2/2009	240	27	28.1	16,400	9.6	5.2	70	8.0
9/2/2009	240	20	28.7	16,400	9.6	6.5	89	7.9
9/2/2009	240	10	29.1	15,500	9.0	7.2	99	7.9
9/2/2009	240	1	30.9	15,100	8.7	10.0	143	8.0
10/8/2009	80	26	27.5	14,500	8.4	4.4	58	7.7
10/8/2009	80	20	27.8	13,500	7.7	5.5	74	7.7
10/8/2009	80	10	28.6	13,200	7.6	6.2	83	7.6
10/8/2009	80	1	29.3	12,400	7.0	7.5	102	7.6
10/8/2009	160	42	27.2	15,500	9.0	--	--	7.6
10/8/2009	160	40	27.2	15,400	9.0	3.2	43	7.6
10/8/2009	160	30	27.3	14,900	8.7	3.5	46	7.5
10/8/2009	160	20	27.7	13,600	7.8	5.1	67	7.5
10/8/2009	160	10	28.6	13,100	7.5	6.5	89	7.5
10/8/2009	160	1	29.5	12,800	7.2	7.8	107	7.5
10/8/2009	240	30	27.4	14,600	8.4	3.9	51	7.5
10/8/2009	240	20	27.5	14,000	8.1	4.5	60	7.5
10/8/2009	240	10	29.6	13,300	7.6	6.1	82	7.5
10/8/2009	240	1	29.6	13,200	7.6	8.0	109	7.5

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent saturation)	pH (standard units)
Station number 3000189089551200—MRGO near mile 59 near Michoud, La.—Continued								
11/13/2009	80	30	19.0	12,200	7.0	8.0	89	7.5
11/13/2009	80	20	18.9	11,800	6.7	8.4	94	7.5
11/13/2009	80	10	19.2	11,700	6.7	8.8	99	7.5
11/13/2009	80	1	21.0	11,700	6.7	9.1	107	7.6
11/13/2009	160	42	19.2	14,100	8.2	.4	5	7.3
11/13/2009	160	40	19.1	14,800	8.6	6.1	70	7.4
11/13/2009	160	30	19.0	12,300	7.1	7.9	89	7.5
11/13/2009	160	30	18.9	12,100	7.0	8.0	90	7.5
11/13/2009	160	10	19.0	11,800	6.8	8.4	94	7.5
11/13/2009	160	1	21.7	11,800	6.7	9.2	109	7.6
11/13/2009	240	30	18.9	12,000	6.9	7.8	88	7.6
11/13/2009	240	20	18.8	11,900	6.9	8.1	91	7.6
11/13/2009	240	10	19.5	11,800	6.7	8.4	96	7.6
11/13/2009	240	1	22.0	11,700	6.7	9.0	106	7.6
Station number 295602089501600—Violet Canal near MRGO near Violet, La.								
8/15/2008		29	28.9	28,300	17.3	6.2	88	7.8
8/15/2008		20	28.9	28,300	17.4	6.1	88	7.8
8/15/2008		10	28.9	28,600	17.5	5.9	84	7.8
8/15/2008		1	28.9	28,500	17.5	5.9	85	7.8
11/24/2008		20	14.4	18,800	11.1	8.2	85	7.6
11/24/2008		10	14.4	18,800	11.1	8.2	85	7.6
11/24/2008		1	14.4	18,800	11.1	8.2	85	7.6
6/10/2009		39	29.3	12,800	7.3	7.0	94	7.8
6/10/2009		30	29.2	12,700	7.3	6.8	93	7.7
6/10/2009		20	29.2	12,800	7.3	6.7	91	7.7
6/10/2009		10	29.3	12,800	7.3	6.6	90	7.7
6/10/2009		1	29.3	12,700	7.2	6.6	90	7.7
Station number 295655089495600—Lake Borgne near MRGO near Violet, La.								
8/15/2008		7	28.8	15,800	9.5	10.6	146	8.0
8/15/2008		1	29.2	14,900	8.6	11.1	153	8.4
9/26/2008		7	24.3	15,700	9.1	8.5	107	--
9/26/2008		1	26.7	14,700	8.5	9.9	134	--
11/24/2008		5	13.9	18,000	10.6	9.9	102	7.9
11/24/2008		1	14.0	18,000	10.6	9.9	102	7.9
1/23/2009		6	10.9	20,900	12.5	10.8	107	8.0
1/23/2009		1	11.0	20,600	12.3	10.5	103	8.0
3/11/2009		6	20.0	14,900	8.6	10.1	118	8.1
3/11/2009		1	20.9	14,300	8.3	10.2	119	8.1

Table 2. Water-quality data for selected sites in the Mississippi River-Gulf Outlet (MRGO), Lake Borgne, and Violet Canal in southeastern Louisiana, August 2008 through December 2009.—Continued

[see fig. 1 for site locations. µS/cm, microsiemens per centimeter; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Date	Distance from left bank looking downstream (yards)	Depth (feet)	Temperature (degrees Celsius)	Specific conductance (µS/cm at 25 degrees Celsius)	Salinity (parts per thousand)	Dissolved oxygen (milligrams per liter)	Oxygen (percent satura-tion)	pH (standard units)
Station number 295655089495600—Lake Borgne near MRGO near Violet, La.—Continued								
6/10/2009		5	28.0	13,200	7.5	6.7	90	7.2
6/10/2009		1	30.5	11,100	6.3	9.2	127	8.2
9/2/2009		6	27.4	17,800	10.5	6.3	84	8.2
9/2/2009		1	28.9	17,900	10.5	9.7	134	8.2
10/8/2009		6	28.0	16,000	9.3	4.5	60	7.5
10/8/2009		1	27.9	16,000	9.4	4.5	60	7.5
11/13/2009		6	17.7	13,000	7.5	9.0	98	7.6
11/13/2009		1	19.0	11,400	6.5	8.6	97	7.7

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
294900089350800—Mississippi River-Gulf Outlet near mile 35 near Hopedale, La. (10-foot depth)												
1					24.6	28.0	--	--	29.0	27.7	--	19.5
2					25.2	28.4	--	--	29.3	27.5	--	19.8
3					25.5	27.8	--	--	29.3	27.1	--	19.1
4					25.3	27.5	--	--	--	26.8	--	17.9
5					25.3	26.8	--	--	--	26.8	--	15.3
6					25.9	27.1	--	--	--	26.8	--	15.2
7					26.2	28.6	--	30.1	--	27.2	26.5	18.6
8					--	29.7	--	31.5	29.0	28.1	27.1	21.4
9					--	29.5	28.9	31.2	28.8	28.4	23.8	21.5
10					--	27.9	30.3	30.9	--	--	22.0	18.8
11					--	26.9	31.7	30.8	--	27.3	21.4	18.1
12					--	26.5	31.4	30.5	--	27.1	21.1	17.4
13					--	26.0	30.6	30.4	--	--	21.6	18.7
14					--	25.8	29.6	31.4	--	--	21.6	21.4
15					--	25.9	--	31.5	--	--	22.8	21.6
16					--	25.6	--	31.1	28.3	--	22.2	19.4
17					--	25.2	--	30.8	--	--	20.3	19.0
18					--	24.9	--	30.8	--	--	19.9	18.6
19					24.6	24.7	--	30.8	--	--	20.3	18.3
20					23.6	24.9	--	30.7	--	--	20.5	17.7
21					24.0	25.1	--	--	--	21.7	20.8	18.4
22				21.7	24.1	25.3	--	--	--	21.9	20.6	19.8
23				22.5	24.7	27.3	--	--	--	22.0	21.0	21.3
24				23.2	25.8	27.9	29.9	29.2	29.3	21.2	21.1	21.7
25				23.6	26.0	29.9	--	28.4	29.5	20.6	20.6	18.6
26				24.1	25.7	31.2	30.4	--	29.3	20.2	19.5	16.8
27				24.1	26.2	31.2	--	--	29.2	20.3	19.1	16.8
28				23.8	26.9	30.7	--	--	--	20.3	19.4	16.6
29				24.0	27.3	29.8	--	--	28.5	21.2	20.2	17.1
30				24.4	27.2	29.5	--	--	27.7	22.9	21.6	18.6
31					27.5		--	--		22.2		19.7
Mean				--	--	27.5	29.5	29.7	28.8	24.8	21.2	18.8
Maximum				--	--	31.2	31.7	31.5	29.6	28.4	27.1	21.7
Minimum				--	--	24.7	27.1	26.6	27.5	20.2	19.1	15.2

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295311089445100—Mississippi River-Gulf Outlet near mile 46 near Yscloskey, La. (10-foot depth)												
1	15.4	--	--	20.2	24.5	27.4	31.5	30.1	28.5	27.0	19.9	15.0
2	15.2	--	--	20.1	24.9	27.9	31.8	30.1	28.4	26.8	19.3	14.6
3	15.5	--	--	19.8	25.1	27.4	31.9	29.7	28.4	26.7	19.0	14.3
4	15.8	--	--	20.0	25.0	27.7	32.1	29.8	28.5	26.7	19.2	13.4
5	16.7	--	--	20.6	25.3	27.2	32.1	30.1	28.3	26.7	19.6	12.5
6	18.1	--	--	20.1	25.7	26.4	31.6	30.7	28.4	26.9	19.4	11.9
7	17.6	--	--	18.3	26.1	26.8	30.7	30.8	28.4	27.2	19.5	11.9
8	16.8	--	--	17.5	26.2	27.4	30.2	30.7	28.4	27.9	19.8	12.6
9	16.8	--	--	17.4	26.4	27.9	30.0	30.6	28.4	28.2	19.7	13.9
10	17.4	--	--	18.0	26.8	28.1	29.8	30.6	28.3	27.9	19.3	13.9
11	17.1	--	--	18.9	27.2	28.5	30.5	30.6	27.9	27.0	18.9	12.7
12	15.6	--	20.0	19.9	27.5	28.6	30.8	30.5	27.3	26.7	18.4	11.5
13	15.0	--	20.0	20.1	27.6	29.1	31.2	30.3	27.1	26.7	18.1	11.5
14	13.8	--	20.5	20.7	27.6	29.3	31.5	30.5	27.2	26.7	18.4	12.0
15	13.3	--	20.2	20.2	27.6	29.6	31.2	30.4	27.5	27.2	18.3	13.4
16	11.8	--	20.1	20.6	27.9	29.9	30.7	30.2	27.6	26.9	18.6	13.8
17	10.6	--	20.0	20.6	27.3	30.2	30.2	29.9	27.6	24.6	18.1	13.2
18	11.1	--	20.4	20.6	25.1	30.5	29.8	29.9	27.9	22.2	17.4	12.2
19	11.6	--	20.9	21.0	23.6	31.1	29.6	30.0	28.1	21.2	17.2	12.1
20	11.2	--	21.1	21.3	23.1	31.4	29.6	29.9	28.3	20.7	16.9	11.5
21	10.3	--	20.9	21.4	23.3	31.6	29.7	29.7	28.4	20.7	16.8	11.7
22	10.2	--	20.8	21.5	23.9	31.8	29.5	29.5	29.2	20.9	16.6	11.9
23	--	--	20.5	21.8	24.5	31.7	29.4	28.9	29.0	21.3	16.5	12.3
24	--	--	20.7	23.0	25.5	31.7	29.5	28.5	29.0	20.8	16.7	13.0
25	--	--	20.9	24.1	25.4	31.2	29.9	28.6	29.1	20.3	16.7	12.7
26	--	--	21.2	24.5	25.4	31.4	29.9	29.1	29.1	20.0	16.4	12.0
27	--	--	21.3	24.3	25.8	31.5	29.8	29.0	29.1	19.8	15.4	11.8
28	--	--	21.6	23.9	26.1	31.6	29.7	28.9	29.4	19.7	15.2	11.3
29	--	--	20.4	23.8	26.8	--	29.9	29.1	29.0	20.1	15.2	10.7
30	--	--	19.8	24.2	26.8	31.6	30.1	29.2	27.6	20.8	15.5	10.4
31	--	--	20.2		26.9		30.1	28.9		20.6		10.9
Mean	--	--	--	20.9	25.8	--	30.5	29.8	28.3	24.1	17.9	12.5
Maximum	--	--	--	24.5	27.9	--	32.1	30.8	29.4	28.2	19.9	15
Minimum	--	--	--	17.4	23.1	--	29.4	28.5	27.1	19.7	15.2	10.4

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295311089445100—Mississippi River-Gulf Outlet near mile 46 near Yscloskey, La. (20-foot depth)												
1		13.2	14.9	20.0	23.7	26.8	31.2	29.6	28.4	27.2	19.4	14.8
2		13.1	12.9	19.9	24.0	27.0	31.1	29.9	28.4	27.2	19.5	14.4
3		12.7	12.8	19.5	24.3	27.5	31.4	29.8	28.3	26.8	19.4	14.1
4		12.2	12.5	19.7	24.8	27.5	31.7	29.7	28.2	26.5	19.3	13.5
5		11.2	12.7	20.3	25.2	27.1	31.8	29.6	28.2	26.5	19.2	12.2
6		11.2	13.3	19.9	25.0	26.6	31.3	29.7	28.2	26.5	19.1	11.7
7		11.6	14.5	18.0	25.4	26.6	30.4	29.9	28.1	26.5	19.2	11.6
8		12.3	15.5	17.1	25.5	26.6	29.8	30.1	28.2	26.7	19.6	12.3
9		13.1	16.3	16.7	25.5	26.7	29.4	30.3	28.2	27.5	19.4	13.2
10		14.4	16.7	17.3	25.8	26.9	29.1	30.2	28.2	27.6	19.1	13.7
11		15.6	17.5	17.9	25.9	27.4	29.3	30.2	27.8	26.7	18.7	12.5
12		15.7	17.3	19.2	26.2	28.3	29.6	30.2	27.0	26.3	18.1	11.2
13		15.9	17.2	19.7	26.2	28.9	29.8	29.8	26.6	26.2	17.8	11.1
14		16.2	18.3	20.3	26.4	29.2	30.1	30.1	26.7	25.9	17.9	11.3
15		16.3	18.9	19.9	26.8	29.3	30.5	30.1	26.7	26.1	17.9	12.0
16		16.5	18.6	20.1	27.0	29.5	30.6	30.0	26.8	26.6	18.0	13.1
17		15.9	18.9	20.3	27.1	29.9	30.3	29.7	26.8	24.0	17.9	12.8
18		16.2	19.2	20.4	24.9	30.1	29.8	29.7	27.0	21.5	17.3	12.0
19		16.6	19.9	20.6	23.2	30.6	29.7	29.7	27.1	20.4	16.9	11.9
20		15.3	20.4	21.0	22.7	30.8	29.6	29.7	27.2	20.0	16.6	11.4
21		15.5	20.3	21.1	23.1	31.2	29.3	29.6	27.5	20.4	16.6	11.4
22		14.5	20.4	21.2	23.6	31.2	29.1	29.2	28.2	20.7	16.4	11.6
23		13.4	20.4	21.3	24.1	31.2	29.1	29.2	28.5	21.0	16.3	12.0
24	10.9	13.3	20.4	21.9	24.7	31.2	29.1	28.8	28.6	20.6	16.4	12.8
25	11.4	13.8	20.3	22.8	24.6	31.1	29.1	29.2	28.8	20.2	16.4	12.5
26	11.6	14.3	20.9	23.6	24.8	31.0	29.1	29.1	28.8	19.9	16.2	11.7
27	12.0	15.5	21.3	24.0	25.1	31.0	29.3	28.7	28.8	19.5	15.2	11.5
28	13.2	15.7	21.3	23.6	25.4	31.1	29.4	28.8	28.9	19.9	15.0	11.1
29	13.4		20.2	23.4	25.9	31.4	29.4	28.7	28.5	19.9	14.8	10.3
30	12.7		19.8	23.6	26.4	31.3	29.5	28.9	27.4	20.6	14.9	10.2
31	12.9		19.9		26.6		29.4	28.9		20.3		10.6
Mean	--	14.3	17.9	20.5	25.2	29.2	29.9	29.6	27.9	23.7	17.6	12.1
Maximum	--	16.6	21.3	24	27.1	31.4	31.8	30.3	28.9	27.6	19.6	14.8
Minimum	--	11.2	12.5	16.7	22.7	26.6	29.1	28.7	26.6	19.5	14.8	10.2

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
300018089551200—Mississippi River-Gulf Outlet near mile 59 near Michoud, La. (10-foot depth)												
1	15.0	12.7	15.1	20.1	24.8	27.8	32.0	30.0	29.5	28.3	21.4	15.6
2	15.4	13.9	13.8	20.2	25.0	28.1	32.2	30.1	29.1	28.2	20.9	14.9
3	15.5	13.2	12.4	20.0	25.4	28.0	31.8	29.9	29.0	27.9	20.7	15.1
4	16.1	13.1	12.2	20.0	24.6	28.2	31.9	30.4	29.1	27.1	20.6	14.9
5	15.9	12.4	13.0	20.5	24.6	27.0	31.8	30.8	28.9	27.4	20.7	14.3
6	16.6	12.3	13.9	20.2	25.5	26.7	31.3	31.3	29.3	27.4	20.4	13.2
7	16.5	12.8	15.0	19.6	25.6	27.7	30.8	31.6	29.2	27.7	20.3	12.5
8	16.3	13.3	16.1	18.6	--	28.3	30.6	31.4	29.6	28.3	19.9	13.1
9	16.5	13.8	16.4	18.5	26.9	28.6	30.5	31.3	29.8	28.7	19.5	14.4
10	17.1	14.4	17.4	19.2	26.6	28.7	30.9	31.4	29.4	28.5	19.7	13.7
11	17.1	14.9	18.1	19.5	27.3	28.8	31.5	31.4	28.7	27.7	19.5	13.1
12	15.8	14.8	18.6	19.9	27.8	29.0	31.8	31.3	27.7	27.3	19.4	11.7
13	15.5	15.5	20.0	20.9	28.8	29.1	31.7	31.1	27.6	27.6	19.2	12.3
14	14.8	16.1	20.7	20.4	28.5	29.3	31.7	31.7	27.4	27.8	19.2	13.2
15	14.3	17.3	19.0	20.1	28.5	29.7	31.5	31.6	27.7	27.3	19.2	13.9
16	12.9	16.8	19.1	20.5	28.6	30.0	31.2	31.2	27.7	27.1	19.8	14.0
17	13.3	16.7	19.1	20.8	28.8	30.0	30.7	31.1	28.1	25.6	19.3	13.6
18	13.3	16.3	19.7	20.9	25.9	31.0	30.3	30.8	28.2	24.1	18.7	13.1
19	13.2	16.3	20.5	21.3	24.0	31.3	30.3	31.0	28.2	22.6	18.5	12.9
20	12.7	16.2	21.3	20.8	23.6	31.4	30.4	30.5	28.6	21.7	17.7	12.3
21	11.9	16.0	21.3	21.0	23.7	31.6	30.4	30.3	29.2	20.3	17.3	12.6
22	11.7	16.0	21.3	21.5	23.9	31.3	30.0	29.9	29.8	20.6	16.9	12.5
23	11.8	14.7	21.1	21.7	24.4	31.4	29.7	30.0	29.7	21.4	17.5	12.7
24	12.7	15.5	21.1	22.7	25.0	31.5	29.9	29.5	30.1	21.2	17.7	13.1
25	13.5	15.4	21.4	23.9	25.0	31.9	30.4	29.8	30.1	21.1	17.8	12.7
26	13.6	15.8	21.8	24.3	25.1	32.1	30.2	29.9	29.7	21.0	17.2	12.6
27	14.0	17.3	21.8	24.0	25.5	32.6	29.9	29.9	29.1	20.3	16.6	12.8
28	14.0	17.1	21.7	24.2	26.1	32.2	29.9	29.7	29.0	20.5	16.1	12.9
29	13.9		20.1	24.5	26.7	32.0	29.9	29.8	28.9	20.7	16.1	11.7
30	13.2		19.8	24.5	26.4	31.8	30.1	29.7	28.4	22.5	16.3	11.7
31	12.5		20.5		26.7		30.1	29.4		21.5		11.7
Mean	14.4	15.0	18.5	21.1	--	29.9	30.8	30.6	28.9	24.8	18.8	13.2
Maximum	17.1	17.3	21.8	24.5	--	32.6	32.2	31.7	30.1	28.7	21.4	15.6
Minimum	11.7	12.3	12.2	18.5	--	26.7	29.7	29.4	27.4	20.3	16.1	11.7

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
738023321—Inner Harbor Navigation Canal at I-10 at New Orleans, La. (10-foot depth)												
1					23.8	27.5	31.7	29.8	29.2	27.8	20.3	15.9
2					24.1	27.1	31.8	29.8	29.0	27.1	20.1	15.4
3					24.2	26.8	31.8	29.9	29.0	27.3	19.9	14.6
4					24.3	26.9	31.8	30.3	29.1	27.4	19.9	14.2
5					24.6	26.8	31.8	30.5	28.9	26.6	20.0	13.1
6					24.9	26.6	31.4	30.8	28.4	26.8	19.9	13.0
7					25.2	26.9	30.8	31.0	28.3	27.3	20.0	13.0
8					25.5	27.0	30.4	31.1	28.5	27.5	20.4	13.5
9					25.8	27.2	30.4	30.9	28.4	27.6	20.2	13.8
10					26.6	27.5	30.6	30.9	28.2	27.3	19.6	13.6
11					27.1	28.0	30.8	31.2	28.0	26.8	19.2	13.2
12					27.3	28.4	30.6	31.0	27.9	26.5	18.8	13.1
13					27.5	28.7	30.8	30.9	27.2	26.5	18.6	12.8
14					27.7	29.1	30.9	30.9	27.3	26.6	18.4	12.5
15					27.5	29.2	31.0	30.9	27.6	26.9	18.6	13.0
16					27.2	29.5	30.9	30.8	27.6	26.6	18.6	13.2
17					27.1	29.9	30.4	30.6	27.7	24.7	18.1	12.9
18					26.7	30.3	30.2	30.3	27.8	23.1	17.7	12.8
19					25.7	30.8	30.1	30.2	27.9	22.8	17.7	12.0
20					24.7	31.0	30.1	30.0	28.0	22.5	17.8	11.9
21					24.9	31.2	29.9	29.7	28.1	22.3	18.0	11.7
22				21.6	24.6	31.4	29.7	29.6	28.3	21.5	17.4	11.7
23				22.5	24.7	31.1	29.4	29.6	28.4	21.6	17.2	12.4
24				22.2	24.9	31.2	29.8	29.4	28.4	21.0	17.3	13.2
25				22.8	25.0	31.5	30.1	29.2	28.5	20.7	17.0	12.4
26				23.3	25.0	31.5	29.9	29.2	28.5	20.4	16.3	11.8
27				23.8	25.5	31.4	29.7	29.2	28.8	20.4	15.6	11.6
28				23.5	26.0	32.0	29.6	29.6	29.1	20.0	15.8	11.2
29				23.5	26.5	--	29.7	29.9	28.8	20.5	15.8	10.7
30				23.6	26.8	31.5	29.8	29.7	28.2	21.1	15.9	10.7
31					27.6		29.7	29.5		20.8		11.3
Mean				--	25.8	--	30.5	30.2	28.3	24.4	18.3	12.8
Maximum				--	27.7	--	31.8	31.2	29.2	27.8	20.4	15.9
Minimum				--	23.8	--	29.4	29.2	27.2	20	15.6	10.7

Table 3. Daily mean temperature, in degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295655089495600—Lake Borgne near Mississippi River-Gulf Outlet near Violet, La. (6-foot depth)												
1	14.5	--	--	19.6	24.5	27.7	31.3	29.8	28.1	26.1	20.1	14.5
2	14.7	--	--	19.8	24.7	27.6	31.4	29.6	27.8	26.3	19.7	14.1
3	15.3	--	--	19.5	24.7	27.0	31.3	29.6	27.9	26.3	19.5	14.0
4	16.2	--	--	20.1	24.7	27.1	31.5	29.8	27.9	26.1	19.5	13.3
5	16.8	--	--	21.1	25.1	26.5	31.4	30.4	27.9	26.3	19.7	12.0
6	16.7	--	--	19.5	25.3	26.1	31.0	30.6	28.1	26.8	19.4	11.2
7	17.0	--	--	16.4	25.5	26.6	30.1	30.8	28.3	27.4	19.2	11.1
8	16.6	--	--	17.1	26.0	27.2	29.8	30.4	28.5	27.7	19.4	12.2
9	16.9	--	--	17.5	25.9	27.3	29.8	30.5	28.4	27.9	19.4	13.9
10	17.3	--	--	17.9	26.3	27.8	30.5	30.6	28.0	27.2	19.2	13.3
11	16.8	--	--	19.0	26.8	28.5	30.9	30.7	27.5	26.0	18.9	11.8
12	14.8	--	19.7	19.4	27.7	28.8	31.1	30.4	26.7	25.7	18.5	10.9
13	14.3	--	20.2	19.7	27.8	29.1	31.2	30.1	26.6	26.1	18.4	11.5
14	12.7	--	19.9	20.4	27.6	29.6	31.1	30.4	26.8	26.5	18.6	12.4
15	13.1	--	20.1	19.7	27.5	29.7	30.8	30.2	27.2	27.1	18.9	13.7
16	10.6	--	19.8	20.2	27.6	30.1	30.5	29.7	27.6	26.1	19.3	13.5
17	10.3	--	19.9	20.3	27.1	30.3	29.9	29.7	27.9	23.3	18.5	12.6
18	11.7	--	20.5	20.5	24.4	30.6	29.7	29.9	28.2	20.3	17.4	11.8
19	12.2	--	20.9	20.9	23.2	30.8	29.2	29.9	28.3	18.9	17.2	11.9
20	11.2	--	21.0	21.0	22.7	31.0	29.3	29.9	28.4	18.7	16.8	11.9
21	9.9	--	21.1	21.2	23.0	31.1	29.4	29.7	28.8	19.5	16.6	11.8
22	10.4	--	20.8	21.2	23.4	31.2	29.2	29.6	28.9	20.7	16.4	11.9
23	--	--	20.7	22.2	24.0	31.4	29.3	28.9	28.7	21.2	16.5	12.4
24	--	--	20.8	22.6	24.7	31.4	29.8	28.3	28.6	20.2	16.6	13.0
25	--	--	21.0	23.6	25.0	31.4	30.0	28.4	28.9	19.6	16.7	12.5
26	--	--	21.1	23.8	25.2	31.3	30.0	28.6	28.9	19.1	16.4	11.7
27	--	--	21.2	23.6	25.5	31.4	29.5	28.7	29.0	19.0	15.7	11.7
28	--	--	21.3	23.3	26.1	31.6	29.2	28.8	29.1	19.1	15.3	11.4
29	--	--	19.6	23.7	26.4	--	29.3	29.2	28.1	19.8	15.3	10.7
30	--	--	19.4	24.2	26.7	31.2	29.6	29.2	26.5	21.6	15.5	10.6
31	--	--	19.7		27.2		29.6	28.8		21		10.9
Mean	--	--	--	20.6	25.6	--	30.2	29.7	28.1	23.5	18.0	12.3
Maximum	--	--	--	24.2	27.8	--	31.5	30.8	29.1	27.9	20.1	14.5
Minimum	--	--	--	16.4	22.7	--	29.2	28.3	26.5	18.7	15.3	10.6

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009.

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
294900089350800—Mississippi River-Gulf Outlet near mile 35 near Hopedale, La. (10-foot depth)												
1					18,100	17,800	--	--	36,800	32,600	--	31,400
2					17,100	17,500	--	--	38,100	31,900	--	30,200
3					17,000	17,400	--	--	38,500	32,100	--	31,400
4					17,700	20,000	--	--	--	31,600	--	29,900
5					21,600	24,000	--	--	--	31,400	--	31,200
6					20,100	25,100	--	--	--	31,500	--	29,300
7					18,200	24,800	--	43,700	--	31,100	26,800	26,600
8					--	23,600	--	41,300	32,900	29,400	26,200	24,100
9					--	22,100	42,100	40,500	30,700	27,400	27,100	26,400
10					--	24,200	40,700	39,700	--	--	24,800	28,900
11					--	26,800	39,800	37,400	--	30,700	32,200	27,100
12					--	28,700	39,900	39,800	--	29,600	33,100	24,700
13					--	29,300	41,400	42,100	--	--	31,500	23,400
14					--	31,200	41,400	39,300	--	--	31,700	27,600
15					--	36,200	--	38,200	--	--	32,300	25,600
16					--	39,500	--	37,700	31,500	--	29,800	30,700
17					--	42,100	--	36,400	--	--	30,600	21,500
18					--	44,200	--	35,200	--	--	31,400	19,900
19					17,400	45,200	--	34,000	--	--	30,800	23,400
20					14,000	45,600	--	33,600	--	--	29,700	24,300
21					16,100	46,000	--	--	--	29,200	29,000	23,200
22				18,500	17,700	46,200	--	--	--	28,600	30,000	21,000
23				17,000	17,700	46,300	--	--	--	27,400	30,400	20,400
24				17,900	15,400	46,200	38,400	37,100	29,900	27,100	29,000	20,600
25				18,900	14,700	46,000	--	35,700	28,000	27,500	29,300	20,300
26				19,100	14,300	45,200	39,700	--	27,800	26,700	31,100	20,900
27				19,300	14,700	44,600	--	--	30,700	26,300	31,900	20,900
28				19,000	16,000	44,000	--	--	--	27,200	31,600	22,700
29				18,400	16,600	--	--	--	35,200	26,400	31,000	21,400
30				18,500	17,000	--	--	--	33,700	25,900	31,800	19,700
31					18,600		--	--		25,500		19,900
Mean				--	--	--	--	--	--	--	--	24,800
Maximum				--	--	--	--	--	--	--	--	31,400
Minimum				--	--	--	--	--	--	--	--	19,700

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295311089445100—Mississippi River-Gulf Outlet near mile 46 near Yscloskey, La. (10-foot depth)												
1	18,400	--	--	13,000	12,200	12,100	13,400	15,100	16,400	16,600	14,500	13,100
2	18,300	--	--	13,200	11,700	12,100	13,400	15,200	16,500	16,700	14,000	13,000
3	18,600	--	--	12,500	12,500	12,200	13,500	14,900	16,800	16,600	14,000	13,000
4	18,400	--	--	12,300	12,500	12,200	13,500	15,000	17,100	16,600	13,900	12,500
5	18,300	--	--	12,000	15,800	12,400	13,600	15,000	17,100	16,600	13,900	12,700
6	20,100	--	--	11,500	20,100	12,500	13,700	14,900	17,200	16,400	14,000	12,600
7	21,500	--	--	10,600	18,100	13,000	13,700	15,000	17,300	16,200	14,300	12,400
8	22,200	--	--	12,500	19,400	13,000	13,600	15,200	17,200	15,900	14,200	12,100
9	22,600	--	--	18,100	21,000	12,900	13,400	15,500	17,200	15,800	14,000	11,800
10	24,200	--	--	20,300	20,100	12,900	14,100	15,700	17,200	15,500	15,700	10,700
11	21,500	--	--	20,000	19,500	12,700	14,100	15,700	17,100	15,500	15,900	10,800
12	20,700	--	19,200	20,800	17,800	12,900	14,100	15,600	17,100	15,400	15,700	11,100
13	20,200	--	17,600	19,700	18,400	12,900	14,500	15,500	17,500	15,400	15,600	10,700
14	17,200	--	16,900	15,800	18,500	12,800	14,100	15,700	17,300	15,200	15,100	10,200
15	16,800	--	16,400	14,700	15,100	12,600	14,200	15,900	17,200	15,200	14,700	9,060
16	16,100	--	17,100	14,300	14,100	12,400	14,200	16,100	17,200	14,900	14,100	7,730
17	15,200	--	17,900	15,200	13,000	12,400	14,200	16,200	17,200	14,700	14,600	7,590
18	15,000	--	18,600	15,100	12,700	12,200	14,100	16,300	17,200	15,000	14,800	8,130
19	15,900	--	19,500	13,900	12,600	12,100	14,400	16,200	17,100	15,000	14,700	8,590
20	16,900	--	18,200	12,600	12,600	12,400	14,700	16,100	17,000	15,000	14,500	7,910
21	17,400	--	16,700	12,400	12,700	12,600	14,800	16,000	17,300	14,800	14,300	7,150
22	20,500	--	17,300	12,100	12,800	12,600	14,800	15,600	17,200	14,600	13,900	6,730
23	--	--	18,700	13,100	12,800	12,900	14,900	14,900	17,200	14,800	13,800	6,590
24	--	--	16,300	16,100	12,500	13,300	15,300	15,000	17,300	15,200	13,400	6,680
25	--	--	16,800	16,900	12,400	13,900	15,100	15,400	17,300	15,000	13,300	7,280
26	--	--	19,700	17,800	12,200	13,900	14,800	16,200	17,200	14,900	13,300	7,350
27	--	--	19,700	19,200	12,200	13,800	15,000	16,100	16,900	14,700	13,200	7,320
28	--	--	18,700	15,000	12,600	13,700	14,700	16,200	16,700	14,700	13,000	7,450
29	--	--	13,900	12,600	12,500	--	14,900	16,400	16,200	14,500	12,900	7,490
30	--	--	13,300	12,500	12,300	13,200	15,200	16,700	16,300	14,300	12,900	7,200
31	--	--	13,300		12,000		15,400	16,400		14,500		7,270
Mean	--	--	--	14,900	14,800	--	14,300	15,600	17,100	15,400	14,200	24,800
Maximum	--	--	--	20,800	21,000	--	15,300	16,700	17,500	16,700	15,900	31,400
Minimum	--	--	--	10,600	11,700	--	13,400	14,900	16,200	14,300	12,900	19,700

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295311089445100—Mississippi River-Gulf Outlet near mile 46 near Yscloskey, La. (20-foot depth)												
1		26,700	12,600	13,100	13,000	18,700	14,900	17,400	17,200	17,400	14,800	13,400
2		24,200	13,300	13,400	13,300	18,400	14,900	16,700	17,700	17,700	15,200	13,500
3		21,000	16,800	12,600	15,400	17,800	14,300	16,200	--	17,400	15,700	13,500
4		20,100	19,100	12,300	16,300	17,600	14,900	17,000	--	16,600	15,700	13,100
5		18,300	19,300	12,000	18,800	13,200	14,200	17,000	17,700	16,900	15,300	12,900
6		18,300	19,600	11,400	22,900	13,300	13,800	--	18,000	17,100	14,500	12,800
7		18,400	20,200	10,400	23,500	14,000	14,200	17,200	17,600	16,900	14,700	12,700
8		19,100	21,000	13,400	24,100	13,600	14,600	16,300	17,600	16,800	14,600	12,400
9		19,700	21,200	18,900	26,400	13,300	14,700	17,000	17,600	16,200	14,400	12,300
10		21,800	21,500	20,000	26,700	13,200	15,600	16,900	17,600	15,800	16,100	11,600
11		23,500	22,300	19,900	27,300	13,100	15,500	17,300	17,400	15,700	16,000	11,100
12		22,100	25,500	20,800	27,800	13,700	16,200	16,700	17,300	15,900	15,800	11,400
13		22,500	26,400	21,300	28,100	13,800	17,000	15,900	18,200	16,200	15,800	11,100
14		20,500	22,400	16,500	27,500	14,000	15,200	16,900	17,700	16,100	16,100	11,100
15		20,600	21,800	14,900	25,300	14,100	15,400	16,900	18,000	16,200	16,300	10,400
16		17,500	26,800	14,700	24,000	14,000	16,200	17,400	18,100	15,300	15,900	9,520
17		16,000	26,100	14,800	20,800	14,100	15,800	19,000	18,200	14,700	14,900	8,100
18		16,200	27,100	14,600	12,500	14,600	15,200	20,700	18,500	15,000	15,200	8,570
19		17,400	25,400	13,600	12,000	15,000	16,600	19,900	18,500	15,200	15,200	9,050
20		16,300	21,000	12,100	12,100	15,400	17,700	19,900	18,400	15,300	14,800	8,630
21		19,500	19,900	12,300	13,200	16,000	17,400	18,100	18,100	14,900	14,500	8,860
22		16,600	19,200	13,100	13,000	16,000	17,600	17,500	18,100	14,600	14,500	9,330
23		14,600	20,200	17,400	13,600	15,700	17,500	18,300	17,800	15,100	14,700	7,200
24	23,700	13,700	16,400	21,300	12,500	14,700	17,200	17,600	17,400	15,300	14,100	6,820
25	22,800	13,100	19,000	20,400	13,100	16,000	17,000	17,200	17,400	15,400	13,900	7,600
26	23,100	13,500	22,100	19,300	12,900	16,700	16,600	17,700	17,400	15,000	13,700	7,810
27	23,400	15,400	23,300	18,600	13,000	15,800	16,100	--	17,300	14,700	13,600	7,970
28	22,600	16,000	22,100	16,600	14,300	14,800	16,500	--	17,200	15,600	14,200	7,760
29	19,800		14,800	13,700	16,900	14,000	17,100	18,300	16,500	14,400	14,700	7,830
30	17,500		14,200	13,200	19,300	14,000	17,300	17,900	16,700	14,200	14,500	7,780
31	20,700		13,900		20,300		17,800	17,900		14,600		8,240
Mean	--	18,700	20,500	15,600	18,700	15,000	16,000	--	--	15,800	15,000	10,100
Maximum	--	26,700	27,100	21,300	28,100	18,700	17,800	--	--	17,700	16,300	13,500
Minimum	--	13,100	12,600	10,400	12,000	13,100	13,800	--	--	14,200	13,600	6,820

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
300018089551200—Miss River Gulf Outlet near mile 59 near Michoud, La. (10-foot depth)												
1	16,500	15,500	10,500	11,200	9,150	10,800	13,300	13,500	14,800	14,500	12,300	12,400
2	16,500	16,500	10,400	11,400	8,850	11,200	13,500	13,300	14,900	14,500	12,600	12,500
3	15,500	17,200	11,900	10,700	8,690	11,500	13,200	13,300	15,500	14,300	12,800	11,500
4	14,600	17,300	12,400	10,600	8,420	12,200	13,100	13,800	16,100	14,900	12,800	11,700
5	14,700	17,100	12,900	10,600	8,340	12,900	12,800	14,000	16,700	14,400	12,900	11,700
6	15,900	16,800	13,600	9,490	8,720	12,800	12,600	14,300	16,300	13,700	13,000	11,800
7	16,800	16,700	14,100	9,090	9,570	13,100	12,500	14,700	15,300	13,400	13,100	11,900
8	16,500	16,500	14,400	9,110	--	12,700	13,000	15,300	15,000	13,100	13,200	11,700
9	17,000	16,500	14,200	9,670	11,200	12,400	13,400	15,500	14,800	13,100	13,800	10,000
10	17,400	16,600	14,600	10,900	12,300	12,200	13,800	14,600	14,700	13,100	13,400	8,590
11	17,900	16,700	14,300	12,500	13,400	11,900	13,900	14,300	14,500	13,500	12,400	10,700
12	17,500	15,200	14,500	13,800	14,000	11,700	13,900	14,200	15,500	13,700	12,000	11,100
13	17,800	15,300	15,100	13,200	14,200	11,400	13,700	13,900	15,500	13,400	11,900	9,750
14	16,400	15,100	14,800	12,300	13,300	11,300	13,500	14,300	13,500	13,400	12,300	8,240
15	15,300	14,700	14,000	11,500	13,700	11,400	13,700	14,800	13,200	12,700	12,600	7,380
16	15,700	14,800	14,400	11,800	13,500	11,400	13,700	15,400	13,200	12,000	12,500	6,950
17	15,800	14,900	15,400	12,200	13,400	11,600	13,600	15,700	13,500	12,900	12,200	6,930
18	15,200	14,300	15,700	11,900	12,700	12,000	13,600	15,400	14,000	13,100	12,400	7,100
19	14,800	13,200	16,200	11,000	12,300	12,400	13,300	15,100	13,900	13,300	12,500	6,670
20	15,100	13,600	16,400	9,370	12,300	12,600	13,900	15,000	14,100	13,600	12,600	6,140
21	15,700	13,700	15,900	9,250	12,300	12,600	14,100	14,600	14,300	13,800	13,100	6,200
22	16,300	13,900	15,600	9,320	12,100	12,400	14,100	13,600	14,700	14,000	13,100	6,050
23	17,600	14,300	15,400	8,950	11,900	12,300	14,000	13,900	15,000	13,800	12,900	6,230
24	17,900	14,100	14,900	9,300	12,500	12,700	14,000	14,300	15,100	13,100	12,700	6,860
25	18,200	13,700	14,500	9,570	11,600	13,000	14,000	14,500	15,200	13,200	12,300	6,820
26	17,900	13,500	13,900	9,980	11,100	13,100	13,400	14,500	15,000	13,300	11,200	6,640
27	17,200	13,300	13,000	10,100	10,700	13,200	13,000	14,700	14,100	13,500	10,700	6,740
28	17,400	12,500	13,100	9,860	10,600	12,900	13,100	15,300	13,300	13,100	10,900	6,780
29	16,900		11,200	9,650	10,800	12,300	13,200	15,500	13,300	13,400	11,800	6,730
30	16,400		11,200	9,450	10,600	12,900	13,500	14,500	14,200	13,300	11,900	6,650
31	15,300		11,300		10,800		13,600	14,200		12,400		6,840
Mean	16,400	15,100	13,900	10,600	--	12,200	13,500	14,500	14,600	13,500	12,500	8,600
Maximum	18,200	17,300	16,400	13,800	--	13,200	14,100	15,700	16,700	14,900	13,800	12,500
Minimum	14,600	12,500	10,400	8,950	--	10,800	12,500	13,300	13,200	12,000	10,700	6,050

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
0738023321—Industrial Canal[1] at I-10 at New Orleans, La. (10-foot depth)												
1					8,320	10,000	11,600	10,300	13,100	13,900	10,600	11,000
2					8,300	10,800	10,900	10,600	13,300	13,800	10,600	11,100
3					8,360	10,700	10,600	10,800	14,400	13,900	10,700	10,200
4					8,540	10,700	10,700	11,100	14,600	14,300	10,800	10,100
5					8,640	10,900	10,700	11,200	14,300	12,900	10,900	9,560
6					9,030	11,500	10,400	11,100	12,500	13,000	10,900	9,460
7					9,560	11,000	11,600	12,300	11,900	13,100	11,100	9,690
8					10,500	10,900	11,800	13,100	12,500	13,000	11,500	9,020
9					11,200	10,700	12,400	10,700	12,300	12,900	12,200	7,480
10					11,600	10,500	12,400	10,300	12,100	12,800	12,000	6,920
11					12,000	10,200	12,500	10,600	12,300	12,600	11,000	7,990
12					12,300	9,880	11,700	11,100	13,400	12,400	11,000	9,320
13					12,900	9,780	10,900	10,900	11,400	12,100	10,900	7,740
14					13,400	9,720	11,700	11,400	11,500	12,000	11,300	7,930
15					11,100	10,200	11,900	11,700	11,300	11,300	11,300	7,630
16					11,000	10,400	11,100	12,000	12,400	11,100	11,400	6,970
17					12,100	10,700	10,900	11,300	13,900	11,000	11,300	6,950
18					13,800	10,900	10,300	11,100	13,800	10,600	11,100	6,650
19					13,100	10,500	10,500	11,800	14,500	11,100	11,000	6,580
20					11,500	10,400	10,700	11,400	14,600	11,600	11,200	6,180
21					12,100	10,100	11,100	10,800	14,700	12,000	11,800	6,160
22				8,370	12,100	9,720	11,100	11,400	15,000	12,400	11,500	6,250
23				7,990	12,000	9,650	10,300	11,600	14,700	11,900	10,800	6,010
24				8,630	10,400	9,980	10,200	11,500	13,900	11,100	10,700	5,970
25				9,130	10,000	11,300	10,200	10,900	13,700	11,000	10,200	6,620
26				9,350	9,680	11,300	9,410	11,200	13,200	10,900	9,670	6,730
27				9,620	9,410	10,300	9,860	11,600	12,800	11,000	9,550	6,760
28				8,860	9,330	9,200	10,500	12,300	12,800	10,700	9,740	6,760
29				8,850	9,270	--	10,300	11,900	13,500	10,900	10,200	6,660
30				8,560	9,240	13,100	10,700	11,900	13,900	10,900	10,400	6,540
31				--	9,260	--	10,600	12,700		10,700		6,370
Mean				--	10,600	--	11,000	11,400	13,300	12,000	10,900	7,700
Maximum				--	13,800	--	12,500	13,100	15,000	14,300	12,200	11,100
Minimum				--	8,300	--	9,410	10,300	11,300	10,600	9,550	5,970

Table 4. Daily mean specific conductance, in microsiemens per centimeter at 25 degrees Celsius, for selected sites in the Mississippi River-Gulf Outlet, Lake Borgne, and the Inner Harbor Navigation Canal in southeastern Louisiana, January through December 2009—Continued

[see figure 1 for site location; --, no data. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Day	January	February	March	April	May	June	July	August	September	October	November	December
295655089495600—Lake Borgne near Mississippi River-Gulf Outlet near Violet, La. (6-foot depth)												
1	18,800	--	--	13,500	10,300	13,400	14,300	15,100	16,400	16,300	13,600	12,200
2	18,200	--	--	12,800	10,000	13,500	14,300	15,300	16,400	15,800	13,700	11,200
3	18,100	--	--	12,900	10,600	13,500	14,800	15,200	17,000	15,900	13,500	12,100
4	19,400	--	--	12,400	11,000	13,800	14,600	15,100	17,700	16,100	13,400	12,400
5	17,900	--	--	12,300	12,400	14,200	14,700	15,100	17,500	15,400	13,600	11,900
6	24,100	--	--	12,000	15,300	13,100	14,500	15,200	17,600	15,100	13,600	12,200
7	21,900	--	--	11,200	16,300	12,600	14,700	15,500	17,200	14,900	13,500	11,700
8	22,100	--	--	10,500	16,100	12,500	14,900	16,500	17,400	15,000	12,800	11,500
9	18,200	--	--	14,400	18,400	12,300	15,000	16,400	17,200	14,500	12,000	11,200
10	20,500	--	--	18,100	18,400	12,000	14,700	16,400	17,500	14,100	11,900	11,400
11	15,900	--	15,400	15,600	16,400	12,100	14,900	16,600	16,900	14,700	11,900	11,200
12	15,600	--	15,300	14,500	14,900	12,400	15,300	16,200	16,800	15,500	12,100	10,400
13	16,500	--	16,200	16,500	13,900	12,700	15,500	16,100	17,000	15,400	13,500	9,870
14	14,900	--	15,000	13,400	14,100	12,400	15,200	16,200	17,100	15,400	14,300	9,210
15	16,200	--	16,800	12,400	13,800	12,500	15,000	16,200	17,100	15,300	14,100	8,030
16	14,500	--	15,700	12,500	13,200	12,700	14,800	16,100	18,400	15,200	14,000	7,740
17	13,600	--	16,400	12,300	11,900	12,800	14,900	16,400	19,000	15,100	14,100	8,280
18	15,400	--	16,000	11,800	12,600	13,000	15,000	16,200	18,200	14,200	14,200	7,990
19	15,900	--	15,600	11,700	12,400	13,400	14,800	16,400	17,700	14,100	14,300	7,030
20	15,300	--	14,000	11,400	12,600	14,100	14,700	16,400	17,400	14,500	13,800	6,890
21	15,600	--	15,700	10,300	11,700	14,400	14,900	15,900	17,200	14,800	13,200	7,180
22	20,400	--	15,800	10,300	11,500	14,900	15,100	15,900	16,900	15,600	12,800	6,970
23	--	--	14,400	10,400	11,900	15,100	15,400	15,600	16,700	15,600	13,200	6,950
24	--	--	15,200	11,300	13,200	15,000	15,500	15,700	16,500	14,600	13,000	7,710
25	--	--	16,400	11,300	12,900	14,300	15,700	16,500	16,300	15,000	13,300	6,820
26	--	--	16,900	10,500	12,300	14,200	15,000	16,700	16,100	15,000	14,000	6,870
27	--	--	17,000	10,900	12,200	14,500	15,100	16,600	15,900	14,600	13,700	6,880
28	--	--	14,100	11,200	12,100	14,000	15,000	17,000	15,900	14,400	13,700	7,070
29	--	--	14,200	11,200	12,300	--	14,600	17,100	15,300	14,300	13,500	7,120
30	--	--	13,600	10,500	12,700	14,500	14,600	16,700	15,500	14,400	13,200	7,280
31	--	--	--		13,000		14,600	16,500		13,900		7,140
Mean	--	--	--	12,300	13,200	--	14,900	16,100	17,000	15,000	13,400	9,100
Maximum	--	--	--	18,100	18,400	--	15,700	17,100	19,000	16,300	14,300	12,400
Minimum	--	--	--	10,300	10,000	--	14,300	15,100	15,300	13,900	11,900	6,820

[1]Referred to in text as Inner Harbor Navigation Canal.

Table 5. Grain-size distribution and loss on ignition for bed sediment collected at selected sites in the Mississippi River-Gulf Outlet (MRGO) in southeastern Louisiana, June 10, 2009.

Grain size (milli-meters)	294608089310500 – MRGO near mile 30 near Hopedale, La.	294805089335200 – MRGO near mile 34 near Hopedale, La.	294946089361900 – MRGO near mile 37 near Hopedale, La.	295157089423200 – MRGO near mile 44 near Yscloskey, La.	295556089494400 – MRGO near mile 52 near Violet, La.	295709089511200 – MRGO near mile 54 near Violet, La.	300018089551200 – MRGO near mile 59 near Michoud, La.
Percent of sample smaller than or equal to grain size							
1.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
.35	100.0	100.0	100.0	100.0	100.0	100.0	100.0
.25	100.0	100.0	100.0	100.0	100.0	100.0	100.0
.177	98.2	99.4	98.8	100.0	100.0	100.0	100.0
.125	94.6	96.4	94.4	100.0	100.0	100.0	100.0
.088	94.4	96.4	94.4	100.0	100.0	100.0	100.0
.074	94.4	96.4	94.4	100.0	100.0	100.0	100.0
.062	94.4	96.4	94.4	100.0	100.0	100.0	100.0
.07042	64.8	81.7	84.2	82.0	56.5	62.9	53.0
.05690	62.5	78.5	81.7	78.5	53.0	59.0	50.1
.04895	60.0	76.3	80.4	74.0	50.4	57.1	46.9
.03486	53.0	66.7	75.3	66.4	43.4	51.7	39.6
.02198	43.7	54.9	67.0	55.8	34.1	43.4	32.2
.01275	34.1	44.0	57.1	45.0	25.8	34.1	24.9
.00743	27.1	34.8	46.6	36.1	21.1	28.7	19.5
.00636	25.5	33.2	44.0	35.4	19.8	27.8	18.5
.00530	22.7	29.7	41.2	32.2	18.8	27.4	16.3
.00453	21.7	28.4	38.9	30.6	17.1	25.5	15.3
.00135	12.1	15.6	23.0	15.0	8.0	15.0	8.6
Loss on ignition (milligrams per kilogram)							
	79,000	85,000	64,000	98,000	134,000	134,000	143,000

Table 6. Instantaneous discharge at selected sites in the Mississippi River-Gulf Outlet (MRGO) in southeastern Louisiana on March 9 and June 17, 2009.

[--, no data; positive values indicate flow towards the Gulf of Mexico. Rock barrier construction started in February 2009 and extended above the water surface of the entire channel width on June 4, 2009]

Station	Time (hours:minutes)		Area (square feet)		Velocity (feet per second)		Discharge (cubic feet per second)	
	3/9/09	6/17/09	3/9/09	6/17/09	3/9/09	6/17/09	3/9/09	6/17/09
MRGO near mile 30 near Hopedale, La.	10:29	12:05	31,600	33,100	0.264	0.144	8,340	4,730
MRGO near mile 34 near Hopedale, La.	12:27	12:44	29,400	33,300	.113	.039	-3,320	1,260
MRGO near mile 37 near Hopedale, La.	12:54	14:12	29,100	28,000	.335	.121	-9,800	3,370
MRGO near mile 44 near Yscloskey, La.	13:28	14:43	25,500	26,600	.225	.082	-5,760	2,150
MRGO near mile 52 near Violet, La.	14:36	15:17	25,100	26,500	.325	.187	-8,150	-5,010
MRGO near mile 54 near Violet, La.	15:25	15:47	30,900	29,600	.080	.046	-2,500	-1,330
MRGO near mile 59 near Michoud, La.	08:57	16:18	28,100	27,900	.618	.207	16,800	-5,760
MRGO near mile 59 near Michoud, La.	16:02	--	27,700	--	.094	--	2,650	--
Lake Borgne at MRGO near Violet, La.	15:03	15:37	9,450	10,100	1.050	.801	9,880	8,050

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