

Mississippi River Ambient Sampling for 2005

Sample locations:

Upstream samples-parallel to navigation light at river mile 742 on the Arkansas (AR) bank, approx. 1.5 miles upstream of the the Loosahatchie River's mouth:

Station # 1: River mile 742, est. 500' from the AR bank [35° 13' 38" N and 90° 04' 53" W]

Station # 2: River mile 742, est. 500' from the Tennessee (TN) bank [35° 13' 38" N and 90° 04' 25" W]

Sample point parallel to the junction of #3 and #4 sludge lagoons at Maynard C. Stiles Wastewater Treatment Plant, approx. 3,400 feet downstream of the Loosahatchie River's mouth and approx. 1 mile upstream of the Maynard C. Stiles Wastewater Treatment Plant discharge:

Station # 3: River mile 740, 100' from the AR bank [35° 12' 01" N and 90° 05' 01" W]

(Station # 3: Potential location readjustment needed during certain river stages.)

Station # 4: River mile 740, mid-channel [35° 12' 01" N and 90° 03' 52" W]

Station # 5: River mile 740, 100' from the TN bank [35° 12' 01" N and 90° 03' 36" W]

Sample point parallel to north bank of Wolf River's mouth, approx. 1,600 feet downstream of the Maynard C. Stiles Wastewater Treatment Plant discharge:

Station # 6: Approx. river mile 738.5, 100' from the AR bank [35° 10' 58" N and 90° 05' 10" W]

(Station # 6: Potential location readjustment needed during certain river stages.)

Station # 7: Approx. river mile 738.5, mid-channel [35° 10' 58" N and 90° 03' 42" W]

Station # 8: Approx. river mile 738.5, 100' from the TN bank [35° 10' 58" N and 90° 03' 29" W]

Sample point parallel to south end of Mud Island, approx. 3 miles downstream of the Maynard C. Stiles Wastewater Treatment Plant discharge:

Station # 9: River mile 736, 100' from the AR bank [35° 08' 40" N and 90° 04' 17" W]

(Station # 9: Potential location readjustment needed during certain river stages.)

Station # 10: River mile 736, mid-channel [35° 08' 40" N and 90° 03' 52" W]

Station # 11: River mile 736, 100' from the TN bank [35° 08' 40" N and 90° 03' 38" W]

Sample points in the Wolf River Harbor:

Station # 12: Underneath the Mud Island Monorail, mid-channel [35° 08' 56" N and 90° 03' 23" W]

Station # 13: Parallel to the Gayoso pumping station's discharge, mid-channel [35° 09' 42" N and 90° 03' 00" W]

Station # 14: Parallel to the Marble pumping station's discharge, mid-channel [35° 10' 24" N and 90° 02' 51" W]

Sample data:

Nitrate / Nitrite (as Nitrogen): mgs/L

Sample #	3/24/05	5/24/05	8/25/05	11/17/05
1	7.21	2.39	0.40	1.08
2	6.06	2.31	0.34	0.85
3	4.65	2.40	0.26	1.21
4	7.10	2.37	0.28	1.25
5	7.04	2.25	0.34	1.13
6	7.23	2.33	0.27	0.93
7	5.08	2.31	0.31	1.04
8	4.96	2.26	0.22	1.07
9	7.29	2.28	0.25	0.55
10	5.23	2.32	0.28	1.11
11	6.20	2.20	None Detected (<0.20)	1.03
12	4.58	1.40	0.39	0.86
13	5.18	1.08	0.45	0.53
14	4.97	1.08	None Detected (<0.20)	0.27

Total Phosphorus: mgs/L

Sample #	3/24/05	5/24/05	8/25/05	11/17/05
1	0.17	Samples	0.21	0.26
2	0.18	Not	0.25	0.26
3	0.18	Analyzed	0.16	0.24
4	0.18	For	0.18	0.22
5	0.18	Total	0.22	0.30
6	0.18	Phosphorus	0.18	0.24
7	0.17	This	0.17	0.24
8	0.20	Event	0.20	0.37
9	0.19		0.15	0.19
10	0.18		0.16	0.22
11	0.20		0.24	0.31
12	0.09		0.16	0.24
13	0.12		0.14	0.22
14	0.13		0.09	0.20

E. coli: cfu/100mls

Sample #	3/24/05	5/24/05	8/25/05	11/17/05
1	15	500	32,800	73
2	100	400	36	117
3	74	720	18	36
4	33	200	36	91
5	86	364	18	255
6	40	400	73	91
7	48	327	18	109
8	2,200	3,260	8,600	2,600
9	70	255	36	73
10	68	218	36	73
11	840	2,280	11,000	436
12	256	73	1,120	600
13	356	36	1,040	1,000
14	124	36	460	418

Sample notes:

Sample date: 3/24/05

River stage: 7 AM 3/24/05 = +7.9 feet. 24 hour change = a drop of 0.5 feet

See: <http://www.srh.noaa.gov/lmrfc/forecast/rva.shtml>

Rainfall - National Weather Service, Memphis: – previous 72 hours:

See: <http://www.srh.noaa.gov/meg/climate.html>

3/21/05 = 0.03"	3/22/05 = 0.90"	3/23/05 = 0.00"
-----------------	-----------------	-----------------

Note 1: Samples # 3, 6, & 9: moved away from Arkansas bank due to river stage and navigational hazards. Took samples at western channel buoys.

Note 2: Rainfall on March 22 and 23 was regional in coverage. Affected all the counties in Arkansas, Tennessee, Kentucky, and Missouri that border the Mississippi River from Memphis north past the confluence with the Ohio River. By radar estimation, most counties received from 0.5" to 1.0" during this period.

See: <http://www.srh.noaa.gov/lmrfc/precip/data.shtml>, and then click on "precipitation analyses".

Note 3: Sample # 8 exceeded the single sample concentration for *E.coli* in water bodies with the Recreation designation.

See: 1200-4-3-.03 CRITERIA FOR WATER USES, at:

<http://www.state.tn.us/sos/rules/1200/1200-04/1200-04-03.pdf>

Section 4 (f): Recreation

Coliform - The concentration of the *E. coli* group shall not exceed 126 colony forming units per 100 ml, as a geometric mean based on a minimum of 5 samples collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purposes of determining the geometric mean, individual samples having an *E. coli* concentration of less than 1 per 100 ml shall be considered as having a concentration of 1 per 100 ml.

Additionally, the concentration of the *E. coli* group in any individual sample taken from a lake, reservoir, State Scenic River, or Tier II or III stream (1200-4-3-.06) shall not exceed 487 colony forming units per 100 ml. **The concentration of the *E. coli* group in any individual sample taken from any other waterbody shall not exceed 941 colony forming units per 100 ml.**

Sample date: 5/24/05

River stage: 7 AM 5/24/05 = +10.5 feet. 24 hour change = no change

Rainfall - National Weather Service, Memphis: – previous 72 hours:

5/21/05 = 0.00"	5/22/05 = 0.00"	5/23/05 = 0.02"
-----------------	-----------------	-----------------

Note 1: Samples # 3, 6, & 9: moved away from Arkansas bank due to river stage and navigational hazards. Took samples at western channel buoys.

Note 2: Samples # 1, 2, & 10 were collected in the wakes of towboats from 5 to 10 minutes after their passage. All towboats were travelling upstream.

Note 3: Samples 1 through 11 (Mississippi River) had more visible suspended and settled matter than the samples of March 24, 2005.

Note 4: Rainfall on May 23 and 24 was very light. Rainfall affected Arkansas and Missouri counties that border the Mississippi River from Memphis north past the confluence with the Ohio River. By radar estimation, most rainfall less than 0.1". See note # 2 above for the March 24, 2005 sampling event. Prior significant regional rainfall was on May 14, 2005.

Note 5: Sampled for nitrate plus nitrite (as Nitrogen), and *E.coli*. Total Phosphorus not collected this sampling event.

Note 6: Samples # 8 and 11 exceeded the single sample concentration for *E.coli* in water bodies with the Recreation designation. See note # 3 above for March 24, 2005 sampling event.

Sample date: 8/25/05

River stage: 7 AM 8/25/05 = -5.7 feet. **This is “negative” 5.7 feet 24 hour change = a gain of 0.8 foot**

Rainfall - National Weather Service, Memphis: – previous 72 hours:

8/22/05 = 0.00”	8/23/05 = Trace (<0.01”)	8/24/05 = 0.00”
-----------------	--------------------------	-----------------

Note 1: Samples # 3, 6, & 9: moved away from Arkansas bank due to river stage and navigational hazards. Took samples at western channel buoys.

Note 2: No towboats visible on the river during entire sampling event.

Note 3: Rainfall on August 23 was very light. Rainfall affected Arkansas and Missouri counties that border the Mississippi River from Memphis north to the northern Tennessee/Kentucky border. By radar estimation, most rainfall less than 0.1”. See note # 2 above for the March 24, 2005 sampling event. Prior significant regional rainfall was on August 6, 2005.

Note 4: Samples # 1, 8, 11, 12, and 13 exceeded the single sample concentration for *E.coli* in water bodies with the Recreation designation. See note # 3 above for March 24, 2005 sampling event.

Sample date: 11/17/05

River stage: 7 AM 11/17/05 = -5.2 feet. **This is “negative” 5.2 feet 24 hour change = a drop of 0.1 foot**

Rainfall - National Weather Service, Memphis: – previous 72 hours:

11/14/05 = 0.01”	11/15/05 = 0.58”	11/16/05 = 0.00”
------------------	------------------	------------------

Note 1: Samples # 3, 6, & 9: moved away from Arkansas bank due to river stage and navigational hazards. Took samples at western channel buoys.

Note 2: Sample # 7 was collected in the wake of a towboat from 3 to 5 minutes after its passage. The towboat was travelling upstream.

Note 3: Rainfall on November 15 was regional in coverage. Affected all the counties in Arkansas, Tennessee, Kentucky, and Missouri that border the Mississippi River from Memphis north past the confluence with the Ohio River. By radar estimation, most counties received from 0.5” to 1.0” during this period, with several west Tennessee counties receiving >1.0”.

Note 4: Samples # 8 and 13 exceeded the single sample concentration for *E.coli* in water bodies with the Recreation designation. See note # 3 above for March 24, 2005 sampling event.

Note 5: Samples for 2006 are on the next pages

Mississippi River Ambient Sampling for 2006

Sample locations:

Changes for 2006

1. Went to a single mid-channel “upstream” sample at river mile 742.
2. Removed the sample collection points (# 3, 6, and 9) due to navigation hazards.
3. Went to a mid-channel sample and a sample 100’ from the TN bank to characterize the main stem of the Mississippi. The river current impacts the TN bank, and potential impacts hug the TN bank.
4. Removed the sample collection point (# 12) from under the Mud Island Monorail. Sample was a mix of river water and city storm water runoff. Unable to gather useful data about the sample.
5. Equal volume composite for stations # 1 through # 7 for Nitrate / Nitrite (as Nitrogen), Nitrate (as Nitrogen), and Total Phosphorus. Nutrient analyses for stations # 8 and # 9 discontinued.
6. Samples for *E. coli* remain as grab samples for all stations.

Upstream sample-parallel to navigation light at river mile 742 on the Arkansas (AR) bank, approx. 1.5 miles upstream of the the Loosahatchie River’s mouth:

Station # 1: River mile 742, mid-channel [35° 13’ 39” N and 90° 04’ 38” W] (Formerly stations # 1 & 2).

Sample point parallel to the navigation light at river mile 740 on the Tennessee (TN) bank, near the junction of # 3 and # 4 sludge lagoons at Maynard C. Stiles Wastewater Treatment Plant, approx. 3,400 feet downstream of the Loosahatchie River mouth and approx. 1 mile upstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 2: River mile 740, mid-channel [35° 12’ 08” N and 90° 04’ 02” W] (Formerly station # 4)

Station # 3: River mile 740, 100’ from the TN bank [35° 12’ 08” N and 90° 03’ 36” W] (Formerly station # 5)

Sample point parallel to north bank of Wolf River’s mouth approx. river mile 738.5, approx. 1,600 feet downstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 4: Approx. river mile 738.5, mid-channel [35° 11’ 01” N and 90° 03’ 45” W] (Formerly station # 7)

Station # 5: Approx. river mile 738.5, 100’ from the TN bank [35° 11’ 01” N and 90° 03’ 29” W] (Formerly station # 8)

Sample point parallel to south end of Mud Island at river mile 736, approx. 3 miles downstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 6: River mile 736, mid-channel [35° 08’ 39” N and 90° 03’ 57” W] (Formerly station # 10)

Station # 7: River mile 736, 100’ from the TN bank [35° 08’ 39” N and 90° 03’ 38” W] (Formerly station # 11)

Sample points in the Wolf River Harbor:

Station # 8: Parallel to the Gayoso pumping station outfall, mid-channel [35° 09’ 41” N and 90° 03’ 01” W] (Formerly station # 13)

Station # 9: Parallel to the Marble pumping station outfall, mid-channel [35° 10’ 24” N and 90° 02’ 51” W] (Formerly station # 14)

Sample data: (NOTE: A mistake occurred in the date for the sample data below. It is 3/29/06 rather than 3/29/05. Tennessee Water Sentinels regrets any confusion that this may have caused.)

Nitrate / Nitrite (as Nitrogen): mgs/L

Sample	3/29/05			
Composite of stations # 1 through # 7	1.73			

Nitrate (as Nitrogen): mgs/L

Sample	3/29/05			
Composite of stations # 1 through # 7	1.75			

Total Phosphorus: mgs/L

Sample	3/29/05			
Composite of stations # 1 through # 7	0.24			

E. coli: cfu/100mls

Sample #	3/29/05			
1	73			
2	36			
3	109			
4	73			
5	5,000			
6	145			
7	700			
8	73			
9	182			

Sample notes:

Sample date: 3/29/05 (NOTE: A mistake occurred in the date for the sample data below. It is data for 2006 rather than 2005. Tennessee Water Sentinels regrets any confusion that this may have caused.)

River stage: 7 AM 3/24/06 = +12.0 feet. 24 hour change = a drop of 2.3 feet

See: <http://www.srh.noaa.gov/lmrfc/forecast/rva.shtml>

Rainfall - National Weather Service, Memphis: – previous 72 hours:

See: <http://www.srh.noaa.gov/meg/climate.html>

3/26/05 = 0.00"	3/27/05 = <0.01"	3/28/05 = 0.00"
-----------------	------------------	-----------------

Note 1: Previous regional rainfall was on March 20 and 21. Affected all the counties in Arkansas, Tennessee, Kentucky, and Missouri that border the Mississippi River from Memphis north past the confluence with the Ohio River. By radar estimation, most counties received from 0.5" to 1.0" during this period.

See: <http://www.srh.noaa.gov/lmrfc/precip/data.shtml>, and then click on "precipitation analyses".

Note 2: No towboats visible on the river during entire sampling event.

Note 3: Sample # 5 (formerly sample # 8) exceeded the single sample concentration for *E.coli* in water bodies with the Recreation designation.

See: 1200-4-3-.03 CRITERIA FOR WATER USES, at:

<http://www.state.tn.us/sos/rules/1200/1200-04/1200-04-03.pdf>

Section 4 (f): Recreation

Coliform - The concentration of the *E. coli* group shall not exceed 126 colony forming units per 100 ml, as a geometric mean based on a minimum of 5 samples collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purposes of determining the geometric mean, individual samples having an *E. coli* concentration of less than 1 per 100 ml shall be considered as having a concentration of 1 per 100 ml.

Additionally, the concentration of the *E. coli* group in any individual sample taken from a lake, reservoir, State Scenic River, or Tier II or III stream (1200-4-3-.06) shall not exceed 487 colony forming units per 100 ml. **The concentration of the *E. coli* group in any individual sample taken from any other waterbody shall not exceed 941 colony forming units per 100 ml.**

Mississippi River Ambient Sampling for 2007

Sample locations:

Changes for 2007

1. Removed all sampling from Wolf River Harbor. Samples were varying mixtures of river water and storm water runoff. Unable to gather useful data about the samples.
2. Equal volume composite for stations # 1 through # 7 for Nitrate / Nitrite (as Nitrogen), Nitrate (as Nitrogen), and Total Phosphorus.
3. Samples for *E. coli* remain as grab samples for all stations.

Upstream sample-parallel to navigation light at river mile 742 on the Arkansas (AR) bank, approx. 1.5 miles upstream of the the Loosahatchie River's mouth:

Station # 1: River mile 742, mid-channel [35° 13' 39" N and 90° 04' 38" W] (Formerly stations # 1 & 2).

Sample point parallel to the navigation light at river mile 740 on the Tennessee (TN) bank, near the junction of # 3 and # 4 sludge lagoons at Maynard C. Stiles Wastewater Treatment Plant, approx. 3,400 feet downstream of the Loosahatchie River mouth and approx. 1 mile upstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 2: River mile 740, mid-channel [35° 12' 08" N and 90° 04' 02" W] (Formerly station # 4)

Station # 3: River mile 740, 100' from the TN bank [35° 12' 08" N and 90° 03' 36" W] (Formerly station # 5)

Sample point parallel to north bank of Wolf River's mouth approx. river mile 738.5, approx. 1,600 feet downstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 4: Approx. river mile 738.5, mid-channel [35° 11' 01" N and 90° 03' 45" W] (Formerly station # 7)

Station # 5: Approx. river mile 738.5, 100' from the TN bank [35° 11' 01" N and 90° 03' 29" W] (Formerly station # 8)

Sample point parallel to south end of Mud Island at river mile 736, approx. 3 miles downstream of the Maynard C. Stiles Wastewater Treatment Plant outfall:

Station # 6: River mile 736, mid-channel [35° 08' 39" N and 90° 03' 57" W] (Formerly station # 10)

Station # 7: River mile 736, 100' from the TN bank [35° 08' 39" N and 90° 03' 38" W] (Formerly station # 11)

Sample data:

Nitrate / Nitrite (as Nitrogen): mgs/L

Sample	3/08/07			
Composite of stations # 1 through # 7	1.50			

Nitrate (as Nitrogen): mgs/L

Sample	3/08/07			
Composite of stations # 1 through # 7	1.64			

Total Phosphorus: mgs/L

Sample	3/08/07			
Composite of stations # 1 through # 7	0.06			

E. coli: cfu/100mls

Sample #	3/08/07			
1	40			
2	30			
3	20			
4	50			
5	920			
6	40			
7	490			

Sample notes:

Sample date: 3/08/07

River stage: 7 AM 3/08/07 = +22.8 feet. 24 hour change = a rise of 0.5 foot

See: <http://www.srh.noaa.gov/lmrfc/forecast/rva.shtml>

Rainfall - National Weather Service, Memphis: – previous 72 hours:

See: <http://www.srh.noaa.gov/meg/climate.html>

3/05/07 = 0.00"	3/06/07 = 0.00"	3/07/07 = 0.00"
-----------------	-----------------	-----------------

Note 1: Last significant regional rainfall was on March 1, 2007.

See: <http://www.srh.noaa.gov/lmrfc/precip/data.shtml>, and then click on "precipitation analyses".

Note 2: One towboat seen, going upstream, prior to collecting sample #6.