

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT**

The Allegheny County Health Department and the U.S. Geological Survey implemented a water-quality monitoring program in the summer of 2001 to assess the impact of fecal-indicator bacteria on the water resources of the Allegheny, Monongahela, and Ohio Rivers (Three Rivers) in Allegheny County, Pittsburgh, Pennsylvania. Water-quality sampling and river discharge measurements were conducted during dry- and wet-weather conditions at five sampling sites (fig. 6) on the Three Rivers. Samples were collected weekly to establish baseline conditions and for several successive days after three wet weather events. The samples after wet weather events were collected on the following dates: August 8-10, August 29 and 30, and September 25-28.

Testing for individual disease-causing agents is possible and is often done when there is a known or suspected outbreak of a water-borne disease. However, it is cost prohibitive, and in some cases technically impractical, to routinely monitor for all disease-causing bacteria, viruses, and protozoa that may be found in contaminated surface water. For routine water-quality monitoring, harmless bacteria that occur in higher numbers and originate from the same sources as the disease-causing bacteria are typically measured. The fecal coliform bacteria group has long been the preferred indicator bacteria for Federal and State regulatory agencies and until 1986, was the primary indicator bacteria for which regulations were based. Recent advances in the use of indicator bacteria have shown that *Escherichia coli* (*E. coli*) and Enterococci are more reliable for predicting the presence of disease-causing organisms and are now recommended for use in monitoring programs by the U.S. Environmental Protection Agency. Although the presence of fecal indicator bacteria does not prove that pathogenic bacteria are present in the environment, the presence does show that contamination by fecal matter has occurred. High concentrations of microbial indicators and concentrations that exceed standards pose an increased risk of exposure to harmful bacteria and the associated adverse effects.

Three fecal-indicator bacteria samples were collected by the U.S. Geological Survey and analyzed by the Allegheny County Health Department Laboratory including fecal coliform, *E. coli*, and Enterococci bacteria. In addition, field measurements were made of pH, specific conductance, dissolved oxygen, and water temperature. Fecal indicator bacteria may occur in higher concentrations along river banks where tributary streams and combined sewer overflows discharge rather than in the center sections of the large rivers. Because the Three Rivers are wide and stream velocities are low in the summer, high bacteria concentrations may occur for long distances along the banks downstream of discharge points due to incomplete mixing in the river. As a result, two methods of field collection of fecal-indicator bacteria samples were used to quantify the occurrence and distribution of bacteria concentrations in the river cross sections at the 5 river sampling sites (fig. 6).

The first method relied on grab samples collected from 20 to 60 feet from the banks at a depth of 18 inches to assist in the determination of bacteria contamination along the banks. Bank samples assess the safety of the water-based recreation including bank fishing, dock and marine use, and water skiing or jetskiing near the river banks. The second method relied on the collection of one representative sample from the river cross section weighted with respect to the river discharge. This sampling method divided the river cross section into four equal discharge increments and sampled the entire vertical depth of each of the four increments at the centroid of each increment. The composite sample of the four vertical samples results in a sample representative of the water discharging across the river cross section at the sampling site.

The bacteria sampling sites located on the Ohio River at Sewickley and the Monongahela River at Braddock were located at active USGS stream gages. Daily mean discharge data, hydrographs, and information concerning these gages are listed in this report (pages 142 and 134, respectively). Discharge measurements at the time of bacteria sampling at the data collection sites at the Allegheny River at Ninth Street and Monongahela River at Pittsburgh (Smithfield Street Bridge) were made using acoustic Doppler current profiling (ADCP) techniques. Discharge data were obtained at the time of sampling for the site at the Allegheny River at Oakmont by ADCP methods or estimates determined from a USGS stream gage 11 miles upstream on the Allegheny River at Natrona, Pa.

For additional information, contact Ted Buckwalter at the U.S. Geological Survey, 1000 Church Hill Road, Pittsburgh, Pennsylvania 15205; phone - (412) 490-3811 (email - tfbuckwa@usgs.gov).

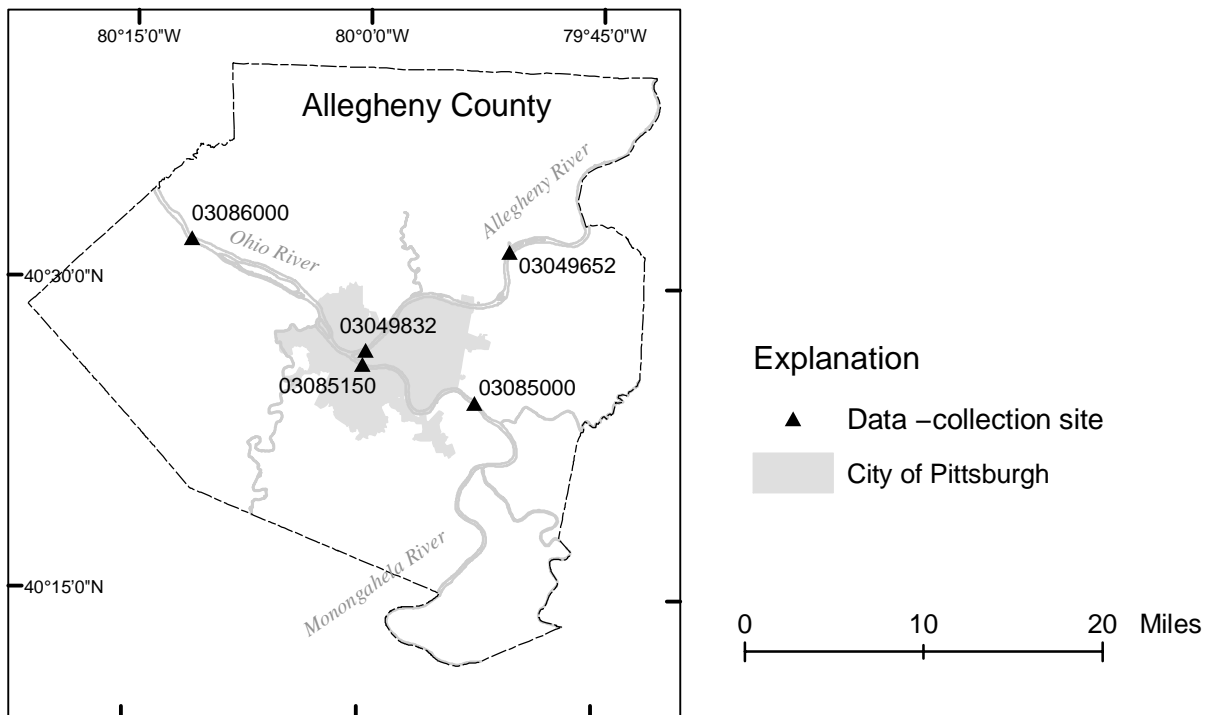


Figure 6.--Location of sites sampled for the fecal-indicator bacteria project.

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03049652 ALLEGHENY RIVER AT HULTON BRIDGE AT OAKMONT, PA

LOCATION.--Lat 40°31'39", long 79°50'51", Allegheny County, Hydrologic Unit 05010009, at Hulton bridge at Oakmont, 0.7 mi downstream from Deer Creek, at river mile 12.7.

DRAINAGE AREA.--11,577 mi².

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	MEDIUM CODE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL									
12...	1505	9	4360	--	6.8	7.3	354	27.0	25.0
12...	1620	9	4360	--	--	7.5	359	27.5	--
12...	1630	9	4360	25.0	7.2	7.4	373	27.0	--
18...	1440	9	4150	40.0	9.8	7.8	411	29.0	--
18...	1500	9	4150	--	--	8.0	397	29.0	--
18...	1510	9	4150	--	9.8	7.8	383	29.0	30.0
24...	1440	9	4040	30.0	9.6	7.8	374	29.0	--
24...	1500	9	4040	--	--	7.9	384	29.0	--
24...	1515	9	4040	--	9.6	7.8	375	29.0	30.0
31...	1510	9	4040	40.0	9.1	8.1	363	33.0	--
31...	1530	9	4040	--	--	7.4	369	33.0	--
31...	1535	R	4040	--	--	7.4	369	33.0	--
31...	1543	9	4040	--	9.1	7.6	345	33.0	35.0
AUG									
07...	1430	9	5650	40.0	9.7	8.0	349	32.0	--
07...	1445	9	5650	--	--	7.9	352	32.0	--
07...	1500	9	5650	--	9.7	7.9	339	32.0	45.0
08...	1445	9	3350	20.0	10.9	8.0	368	33.0	--
08...	1500	9	3350	--	--	8.1	382	33.0	--
08...	1515	9	3350	--	10.9	8.0	365	33.0	45.0
09...	1310	9	3830	40.0	10.4	8.4	393	31.5	--
09...	1325	9	3830	--	--	8.0	360	30.1	--
09...	1330	R	3830	--	--	8.0	360	30.1	--
09...	1335	9	3830	--	--	8.0	368	32.0	45.0
10...	1440	9	3860	40.0	8.9	8.0	371	31.5	--
10...	1505	9	3860	--	--	7.9	376	31.5	--
10...	1515	9	3860	--	8.9	8.0	350	31.5	45.0
14...	1300	9	3410	40.0	9.4	7.8	394	21.0	--
14...	1330	9	3410	--	--	7.6	392	28.0	--
14...	1340	9	3410	--	9.4	7.8	371	29.0	45.0
21...	1545	9	2810	40.0	10.2	7.9	397	29.5	--
21...	1600	9	2810	--	--	7.8	401	29.5	--
21...	1610	9	2810	--	10.2	7.9	387	29.5	20.0
28...	1540	9	4640	40.0	11.1	7.0	405	23.0	--
28...	1550	9	4640	--	--	7.2	392	24.1	--
28...	1600	9	4640	--	11.1	7.1	373	24.3	40.0
29...	1445	9	4040	40.0	12.5	7.1	393	24.5	--
29...	1500	9	4040	--	--	7.4	392	27.0	--
29...	1515	9	4040	--	12.5	7.3	362	27.0	50.0
30...	1246	9	4520	40.0	11.3	8.0	399	27.0	--
30...	1300	9	4520	--	--	7.4	393	27.0	--
30...	1310	9	4520	--	11.3	7.6	386	27.0	50.0
SEP									
04...	1410	9	3980	40.0	12.2	7.9	382	26.0	--
04...	1430	9	3980	--	--	8.0	388	26.5	--
04...	1440	9	3980	--	12.2	7.9	360	26.5	50.0
18...	1300	9	3630	--	8.6	7.8	288	24.0	40.0
18...	1400	9	3630	--	--	7.8	303	28.0	--
18...	1415	9	3630	45.0	9.4	7.9	293	24.0	--
25...	1400	9	3480	--	8.9	7.7	384	22.0	213
25...	1500	9	3480	--	--	7.6	399	20.5	--
25...	1515	9	3480	69.0	9.2	7.8	397	21.5	--
27...	1405	9	4350	--	10.0	7.8	358	21.0	150
27...	1520	9	4350	--	--	7.8	362	20.0	--
27...	1530	9	4350	70.0	9.7	7.9	376	21.0	--

ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
 FECAL-INDICATOR BACTERIA PROJECT--Continued

03049652 ALLEGHENY RIVER AT HULTON BRIDGE AT OAKMONT, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MEDIUM CODE	SAMPLE LOC-ATION, CROSS SECTION (FT FM R BK) (72103)	TUR-BID-ITY (NTU) (00076)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	ENTERO-COCCI, ME MF, WATER (COL/ 100 ML) (31649)	FECAL COLI-FORM, MFC MF, WATER (COL/ 100 ML) (31616)	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL							
12...	9	--	7.4	10	5	90	25.0
12...	9	--	10	220	5	210	--
12...	9	25.0	6.2	20	<5	100	--
18...	9	40.0	4.8	20	30	45	--
18...	9	--	3.8	40	<5	25	--
18...	9	--	6.1	95	35	85	30.0
24...	9	30.0	--	10	5	30	--
24...	9	--	--	15	<5	30	--
24...	9	--	--	180	75	230	30.0
31...	9	40.0	4.8	15	<5	55	--
31...	9	--	6.9	<5	<5	<5	--
31...	R	--	6.9	<5	<5	<5	--
31...	9	--	6.8	35	40	30	35.0
AUG							
07...	9	40.0	3.7	35	5	75	--
07...	9	--	7.3	15	<5	40	--
07...	9	--	3.7	40	5	35	45.0
08...	9	20.0	8.3	25	<5	15	--
08...	9	--	6.2	<5	<5	<5	--
08...	9	--	8.3	20	30	35	45.0
09...	9	40.0	4.6	10	15	30	--
09...	9	--	4.6	<5	<5	5	--
09...	R	--	4.6	<5	<5	<5	--
09...	9	--	5.9	15	<5	65	45.0
10...	9	40.0	4.6	60	45	100	--
10...	9	--	6.3	20	<5	35	--
10...	9	--	5.4	55	20	120	45.0
14...	9	40.0	3.6	5	<5	70	--
14...	9	--	4.5	45	<5	65	--
14...	9	--	3.5	M	20	280	45.0
21...	9	40.0	6.2	25	50	50	--
21...	9	--	5.8	20	10	30	--
21...	9	--	6.8	130	20	210	20.0
28...	9	40.0	8.6	820	690	960	--
28...	9	--	7.4	25	<5	50	--
28...	9	--	9.9	370	240	660	40.0
29...	9	40.0	10	60	80	45	--
29...	9	--	9.0	<5	<5	5	--
29...	9	--	6.1	400	40	410	50.0
30...	9	40.0	6.5	140	75	180	--
30...	9	--	7.8	15	25	10	--
30...	9	--	6.9	55	20	220	50.0
SEP							
04...	9	40.0	7.8	110	20	330	--
04...	9	--	9.4	85	<5	75	--
04...	9	--	9.9	140	5	130	50.0
18...	9	--	5.7	40	10	20	40.0
18...	9	--	5.6	20	<5	20	--
18...	9	45.0	6.1	30	<5	60	--
25...	9	--	7.0	55	5	270	213
25...	9	--	7.8	15	<5	5	--
25...	9	69.0	8.7	130	20	320	--
27...	9	--	5.7	35	<5	33	150
27...	9	--	7.3	15	<5	15	--
27...	9	70.0	5.7	45	5	95	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03049832 ALLEGHENY RIVER AT 9TH STREET BRIDGE AT PITTSBURGH, PA

LOCATION--Lat 40°26'47", long 79°59'58", Allegheny County, Hydrologic Unit 05010009, at 9th Street bridge in Pittsburgh, at river mile 0.7.

DRAINAGE AREA--11,710 mi².

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	MEDIUM CODE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL									
12...	1050	9	4130	--	6.6	7.5	358	26.0	20.0
12...	1110	9	4130	--	7.7	7.4	358	26.0	--
12...	1135	9	4130	20.0	7.2	7.4	366	26.0	--
18...	1000	9	4080	--	7.3	7.4	399	26.5	20.0
18...	1100	9	4080	--	7.3	7.5	401	26.5	--
18...	1110	9	4080	20.0	6.6	7.5	405	26.5	--
24...	1005	9	5910	--	6.7	7.4	375	28.0	20.0
24...	1120	9	5910	--	7.6	7.6	376	28.5	--
24...	1125	9	5910	20.0	6.6	7.4	380	28.5	--
31...	1140	9	3530	--	7.6	7.6	396	27.5	20.0
31...	1300	9	3530	--	--	7.3	396	29.0	--
31...	1320	9	3530	20.0	7.9	8.1	396	27.0	--
AUG									
07...	1000	9	4960	--	7.1	7.2	364	28.5	25.0
07...	1127	9	4960	--	--	7.4	364	29.0	--
07...	1135	9	4960	20.0	7.0	7.8	366	29.0	--
08...	1130	9	4440	--	6.8	7.7	343	29.5	20.0
08...	1220	9	4440	20.0	6.4	7.5	358	29.5	--
08...	1300	9	4440	--	--	7.4	346	29.5	--
09...	1000	9	3710	--	6.3	7.2	353	29.0	30.0
09...	1100	9	3710	--	--	7.5	350	30.0	--
09...	1110	9	3710	20.0	6.3	7.8	350	29.5	--
10...	1010	9	4510	--	7.4	7.8	354	29.0	20.0
10...	1030	9	4510	--	--	8.1	355	29.0	--
10...	1050	9	4510	20.0	7.4	8.1	358	29.0	--
14...	1050	9	4230	--	7.5	7.4	374	29.0	25.0
14...	1120	9	4230	--	--	7.6	375	29.0	--
14...	1135	9	4230	25.0	8.4	7.5	380	29.0	--
21...	1205	9	3140	--	8.1	7.9	369	27.0	25.0
21...	1305	9	3140	--	--	8.0	370	27.0	--
21...	1310	R	3140	--	--	8.0	370	27.0	--
21...	1315	9	3140	25.0	8.2	8.0	369	27.0	--
28...	1052	9	5220	--	9.5	6.5	388	27.0	20.0
28...	1130	9	5220	--	--	7.2	387	27.5	--
28...	1205	9	5220	20.0	9.3	6.4	389	27.5	--
29...	1245	9	4890	--	7.9	--	394	26.5	25.0
29...	1350	9	4890	--	--	--	391	27.0	--
29...	1400	9	4890	25.0	8.5	--	391	27.5	--
30...	1215	9	4720	--	9.1	7.9	415	27.0	30.0
30...	1320	9	4720	--	--	7.9	416	27.0	--
30...	1325	9	4720	25.0	9.0	7.8	426	27.5	--
SEP									
04...	1100	9	4220	--	8.7	7.1	346	25.5	30.0
04...	1145	9	4220	--	--	7.8	345	26.0	--
04...	1150	9	4220	30.0	9.2	7.2	348	26.0	--
18...	1135	9	3320	--	9.5	7.9	304	23.0	30.0
18...	1200	9	3320	--	--	7.9	305	23.0	--
18...	1210	9	3320	30.0	8.9	7.8	306	23.0	--
25...	1015	9	3630	--	8.1	7.5	436	22.0	55.0
25...	1050	9	3630	--	--	7.6	442	20.5	--
25...	1100	9	3630	40.0	7.9	7.5	443	22.0	--
26...	1355	9	5450	--	9.1	7.8	451	20.0	60.0
26...	1410	9	5450	40.0	9.2	7.7	450	20.0	--
26...	1425	9	5450	--	--	7.8	450	21.5	--
26...	1425	R	5450	--	--	7.8	450	20.5	--
27...	1230	9	3770	--	10.4	7.7	420	19.5	40.0
27...	1250	9	3770	40.0	9.9	7.7	421	20.0	--
27...	1310	9	3770	--	--	7.6	418	19.5	--
27...	1310	R	3770	--	--	7.6	418	19.5	--

ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
 FECAL-INDICATOR BACTERIA PROJECT--Continued

03049832 ALLEGHENY RIVER AT 9TH STREET BRIDGE AT PITTSBURGH, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MEDIUM CODE	SAMPLE LOC-ATION, CROSS SECTION (FT FM R BK) (72103)	TUR-BID-ITY (NTU) (00076)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	ENTERO-COCCI, ME MF, WATER (COL/ 100 ML) (31649)	FECAL COLI-FORM, MFC MF, WATER (COL/ 100 ML) (31616)	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL							
12...	9	--	7.5	70	20	180	20.0
12...	9	--	9.8	130	<5	180	--
12...	9	20.0	5.8	65	10	160	--
18...	9	--	7.7	9	<5	110	20.0
18...	9	--	13	3	5	55	--
18...	9	20.0	6.7	45	15	40	--
24...	9	--	5.1	230	35	460	20.0
24...	9	--	6.9	140	20	290	--
24...	9	20.0	4.5	45	40	130	--
31...	9	--	4.5	10	<5	40	20.0
31...	9	--	7.8	5	<5	25	--
31...	9	20.0	5.1	35	25	60	--
AUG							
07...	9	--	4.2	<5	10	70	25.0
07...	9	--	6.5	20	5	30	--
07...	9	20.0	3.1	45	5	55	--
08...	9	--	3.4	2900	200	7600	20.0
08...	9	20.0	2.9	600	150	1600	--
08...	9	--	5.6	2700	230	4400	--
09...	9	--	6.1	1800	85	1600	30.0
09...	9	--	7.9	440	20	560	--
09...	9	20.0	4.9	900	50	150	--
10...	9	--	3.6	240	575	230	20.0
10...	9	--	120	6400	225	14000	--
10...	9	20.0	3.3	4200	220	21000	--
14...	9	--	3.4	85	5	200	25.0
14...	9	--	5.6	75	<5	85	--
14...	9	25.0	3.7	160	15	6900	--
21...	9	--	4.4	160	5	260	25.0
21...	9	--	7.1	<5	<5	<5	--
21...	R	--	--	<5	<5	5	--
21...	9	25.0	3.7	60	10	280	--
28...	9	--	6.0	460	25	1500	20.0
28...	9	--	6.0	420	20	750	--
28...	9	20.0	5.6	160	60	650	--
29...	9	--	9.8	280	200	5100	25.0
29...	9	--	17	2200	265	3300	--
29...	9	25.0	9.9	2000	360	3700	--
30...	9	--	4.7	440	65	620	30.0
30...	9	--	9.9	35	100	540	--
30...	9	25.0	6.2	30	110	640	--
SEP							
04...	9	--	6.2	140	10	420	30.0
04...	9	--	11	<5	<5	15	--
04...	9	30.0	7.6	190	<5	360	--
18...	9	--	5.3	40	5	35	30.0
18...	9	--	8.2	5	<5	5	--
18...	9	30.0	4.5	25	15	50	--
25...	9	--	8.1	5200	525	11000	55.0
25...	9	--	12	690	5	880	--
25...	9	40.0	8.8	7900	380	10000	--
26...	9	--	7.0	400	20	690	60.0
26...	9	40.0	6.9	730	20	830	--
26...	9	--	7.6	220	10	580	--
26...	R	--	7.6	150	<5	540	--
27...	9	--	5.6	65	5	140	40.0
27...	9	40.0	5.5	120	5	160	--
27...	9	--	7.0	35	5	90	--
27...	R	--	7.0	45	<5	120	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03085000 MONONGAHELA RIVER AT BRADDOCK, PA

LOCATION.--Lat 40°23'28", long 79°51'30", Allegheny County, Hydrologic Unit 05020005, 300 ft upstream from dam at lock 2 at Braddock, 1,700 ft downstream from Turtle Creek, and 11.2 mi upstream of confluence with Allegheny River.

DRAINAGE AREA.--7,337 mi².

REMARKS.--Other data for this station can be found on pages 134-135.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	MEDIUM CODE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL									
12...	1510	9	14800	--	7.8	7.5	298	27.0	40.0
12...	1530	9	14800	--	--	7.8	323	25.5	--
12...	1540	9	14800	40.0	7.8	7.6	287	25.5	--
18...	1435	9	3670	30.0	6.7	7.7	389	27.0	--
18...	1530	9	3670	--	--	7.6	387	27.5	--
18...	1540	9	3670	--	6.7	7.8	385	26.5	40.0
24...	1405	9	3180	--	6.5	7.5	314	28.5	40.0
24...	1500	9	3180	--	--	7.4	321	29.0	--
24...	1510	9	3180	30.0	7.3	7.6	321	28.0	--
31...	0840	9	21800	--	7.7	7.0	275	24.5	20.0
31...	1005	9	21800	20.0	7.7	7.2	275	25.0	--
31...	1040	9	21800	--	--	7.3	262	26.0	--
AUG									
07...	0810	9	4720	--	6.7	7.4	300	26.0	20.0
07...	0850	9	4720	20.0	6.6	7.4	297	26.0	--
07...	0910	9	4720	--	--	7.6	298	26.5	--
08...	1000	9	5460	--	7.0	7.5	308	27.0	50.0
08...	1030	9	5460	--	--	7.5	307	27.5	--
08...	1040	9	5460	20.0	6.5	7.6	313	27.0	--
09...	0830	9	4210	--	6.2	7.2	317	28.5	25.0
09...	0855	9	4210	--	--	7.4	320	28.5	--
09...	0902	9	4210	25.0	6.2	7.4	322	28.5	--
10...	0815	9	3140	--	7.3	7.8	319	28.5	25.0
10...	0840	9	3140	--	--	7.9	327	28.0	--
10...	0900	9	3140	40.0	6.6	7.6	324	28.5	--
14...	0830	9	11600	--	8.5	7.7	300	27.0	25.0
14...	0945	9	11600	--	--	7.7	296	27.0	--
14...	1000	9	11600	25.0	8.2	7.7	308	27.5	--
21...	0925	9	3340	--	8.0	7.6	306	25.0	25.0
21...	1025	9	3340	--	--	7.7	305	25.0	--
21...	1035	9	3340	25.0	7.8	7.5	308	25.0	--
28...	0845	9	5670	--	8.7	7.9	339	27.0	20.0
28...	0950	9	5670	--	--	8.0	337	27.5	--
28...	1010	9	5670	50.0	8.0	7.0	337	29.0	--
29...	1020	9	5650	--	7.9	7.4	330	27.5	25.0
29...	1120	9	5650	--	--	7.5	329	27.5	--
29...	1130	9	5650	25.0	7.6	7.4	332	28.0	--
30...	0940	9	4900	--	7.8	7.2	347	26.5	25.0
30...	1035	9	4900	--	--	7.4	353	26.5	--
30...	1045	9	4900	60.0	7.4	7.2	351	26.5	--
SEP									
04...	0900	9	5120	--	8.4	7.9	408	26.5	30.0
04...	1000	9	5120	--	--	7.6	404	26.5	--
04...	1015	9	5120	30.0	7.5	7.4	410	26.5	--
18...	0810	9	2350	--	8.2	7.6	328	23.0	30.0
18...	0915	9	2350	--	--	7.6	337	22.5	--
18...	0930	9	2350	30.0	8.0	7.6	331	23.0	--
25...	0845	9	7770	--	8.5	7.4	419	22.5	25.0
25...	0915	9	7770	30.0	8.2	7.6	426	21.5	--
25...	0930	9	7770	--	--	7.5	418	21.0	--
25...	0935	R	7770	--	--	7.5	418	21.0	--
26...	1230	9	9090	--	8.7	7.5	438	22.5	25.0
26...	1250	9	9090	30.0	8.3	7.5	443	22.5	--
26...	1315	9	9090	--	--	7.6	436	22.0	--
27...	0930	9	5400	--	9.9	7.5	446	20.0	25.0
27...	1000	9	5400	40.0	9.8	7.6	445	20.0	--
27...	1010	9	5400	--	--	7.6	446	19.5	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03085000 MONONGAHELA RIVER AT BRADDOCK, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MEDIUM CODE	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	TUR- BID- ITY (NTU) (00076)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	ENTERO- COCCI, ME MF, WATER (COL/ 100 ML) (31649)	FECAL COLI- FORM, MFC MF, WATER (COL/ 100 ML) (31616)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL							
12...	9	--	--	380	85	70	40.0
12...	9	--	--	<100	<5	<5	--
12...	9	40.0	--	20	30	850	--
18...	9	30.0	15	120	<5	160	--
18...	9	--	14	120	<5	160	--
18...	9	--	12	80	<5	65	40.0
24...	9	--	11	80	10	260	40.0
24...	9	--	15	120	5	170	--
24...	9	30.0	10	40	<5	100	--
31...	9	--	75	45	35	300	20.0
31...	9	20.0	30	45	15	170	--
31...	9	--	45	120	30	260	--
AUG							
07...	9	--	12	960	20	340	20.0
07...	9	20.0	10	140	15	290	--
07...	9	--	13	320	15	520	--
08...	9	--	14	400	50	760	50.0
08...	9	--	14	6000	125	8000	--
08...	9	20.0	10	12000	630	14000	--
09...	9	--	15	280	130	850	25.0
09...	9	--	16	35	20	90	--
09...	9	25.0	12	420	30	850	--
10...	9	--	4.9	1100	55	1400	25.0
10...	9	--	7.9	510	15	840	--
10...	9	40.0	5.4	11000	530	23000	--
14...	9	--	14	320	<5	760	25.0
14...	9	--	16	230	15	680	--
14...	9	25.0	10	140	20	220	--
21...	9	--	9.7	290	35	440	25.0
21...	9	--	14	320	45	640	--
21...	9	25.0	9.7	360	60	580	--
28...	9	--	14	100	45	450	20.0
28...	9	--	15	520	130	1500	--
28...	9	50.0	13	200	90	1100	--
29...	9	--	14	2000	190	1600	25.0
29...	9	--	15	2000	250	1700	--
29...	9	25.0	14	1100	335	2300	--
30...	9	--	19	60	185	6400	25.0
30...	9	--	20	50	150	740	--
30...	9	60.0	18	50	155	710	--
SEP							
04...	9	--	12	<5	<5	100	30.0
04...	9	--	13	100	5	160	--
04...	9	30.0	7.6	40	<5	150	--
18...	9	--	13	170	15	130	30.0
18...	9	--	14	30	5	40	--
18...	9	30.0	11	120	5	140	--
25...	9	--	12	440	30	640	25.0
25...	9	30.0	13	2600	175	19000	--
25...	9	--	18	1600	220	15000	--
25...	R	--	18	1400	370	19000	--
26...	9	--	16	1000	10	1800	25.0
26...	9	30.0	14	760	35	730	--
26...	9	--	17	90	15	250	--
27...	9	--	11	860	15	310	25.0
27...	9	40.0	11	480	30	320	--
27...	9	--	12	570	35	320	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03085150 MONONGAHELA RIVER AT PITTSBURGH, PA

LOCATION--Lat 40°26'06", long 80°00'08", Allegheny County, Hydrologic Unit 05020005, at Smithfield Street bridge in Pittsburgh, at river mile 0.8.

DRAINAGE AREA--7,367 mi².

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	MEDIUM CODE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL									
12...	1325	9	14000	--	--	7.5	260	24.0	--
12...	1330	9	14000	35.0	6.7	7.6	269	24.5	--
18...	1210	9	3080	--	7.2	7.7	317	25.0	60.0
18...	1310	9	3080	--	--	7.6	315	26.0	--
18...	1315	9	3080	20.0	7.4	7.5	315	25.0	--
24...	1240	9	3180	--	7.1	7.9	316	28.0	30.0
24...	1325	9	3180	--	--	7.8	312	30.0	--
24...	1330	9	3180	20.0	7.1	7.6	315	28.0	--
31...	1400	9	19900	--	7.1	7.3	278	25.0	30.0
31...	1450	9	19900	--	--	7.2	279	26.0	--
31...	1510	9	19900	20.0	7.2	7.2	290	25.0	--
AUG									
07...	1230	9	5060	--	7.1	7.7	303	26.0	20.0
07...	1325	9	5060	--	--	7.7	300	27.0	--
07...	1345	9	5060	20.0	7.5	7.7	301	27.0	--
08...	1410	9	5270	--	7.6	7.7	293	28.0	20.0
08...	1440	9	5270	--	--	7.6	292	27.0	--
08...	1445	9	5270	20.0	6.5	7.9	288	27.0	--
09...	1225	9	3800	--	7.0	7.6	300	28.0	20.0
09...	1315	9	3800	25.0	7.0	7.6	300	28.0	--
09...	1350	9	3800	--	--	7.2	298	29.0	--
10...	1140	9	3010	--	8.0	7.6	307	28.0	30.0
10...	1200	9	3010	--	--	7.6	307	28.0	--
10...	1220	9	3010	30.0	7.9	7.7	307	28.0	--
14...	1300	9	10700	--	7.6	7.2	313	29.0	30.0
14...	1400	9	10700	--	--	7.2	309	29.0	--
14...	1415	9	10700	30.0	7.4	7.3	311	29.0	--
21...	1400	9	3030	--	8.2	7.6	298	26.0	57.0
21...	1445	9	3030	--	8.3	7.6	298	26.0	--
21...	1500	9	3030	25.0	8.3	7.6	298	26.0	--
28...	1300	9	5620	--	8.5	4.6	336	27.0	20.0
28...	1355	9	5620	--	--	4.8	336	27.0	--
28...	1400	9	5620	20.0	8.9	5.4	336	27.0	--
29...	1430	9	5400	--	7.8	7.2	337	27.0	20.0
29...	1525	9	5400	--	--	7.2	331	28.0	--
29...	1530	R	5400	--	--	7.2	331	28.0	--
29...	1535	9	5400	20.0	7.3	7.2	343	28.0	--
30...	1400	9	5740	--	7.8	7.4	331	28.0	20.0
30...	1450	9	5740	--	--	7.6	328	28.0	--
30...	1500	9	5740	20.0	7.9	7.6	326	28.0	--
SEP									
04...	1300	9	5800	--	8.1	7.1	406	26.0	30.0
04...	1350	9	5800	--	--	7.5	407	26.0	--
04...	1400	9	5800	30.0	8.3	7.8	407	26.0	--
18...	1000	9	2700	--	9.4	8.2	352	24.0	30.0
18...	1045	9	2700	--	--	8.0	357	24.0	--
18...	1055	9	2700	30.0	9.4	8.2	353	24.0	--
25...	1120	9	7550	--	7.9	7.5	484	23.0	40.0
25...	1145	9	7550	50.0	7.9	7.5	486	23.0	--
25...	1205	9	7550	--	--	7.6	485	22.0	--
26...	1445	9	9070	--	8.3	7.7	439	21.0	60.0
26...	1500	9	9070	70.0	8.3	7.8	444	21.0	--
26...	1530	9	9070	--	--	7.6	450	21.0	--
27...	1050	9	2880	--	8.7	7.3	444	21.0	60.0
27...	1055	R	2880	--	8.7	7.3	444	21.0	60.0
27...	1110	9	2880	60.0	8.9	7.4	445	21.0	--
27...	1130	9	2880	--	--	7.4	445	21.0	--

ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
 FECAL-INDICATOR BACTERIA PROJECT--Continued

03085150 MONONGAHELA RIVER AT PITTSBURGH, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MEDIUM CODE	SAMPLE LOCATION, CROSS SECTION (FT FM R BK) (72103)	TURBIDITY (NTU) (00076)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	ENTERO-COCCI, ME MF, WATER (COL/ 100 ML) (31649)	FECAL COLI-FORM, MFC MF, WATER (COL/ 100 ML) (31616)	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)
JUL							
12...	9	--	45	290	60	440	--
12...	9	35.0	22	1000	150	1600	--
18...	9	--	8.7	84	10	70	60.0
18...	9	--	14	35	<5	35	--
18...	9	20.0	11	80	5	55	--
24...	9	--	6.2	590	15	500	30.0
24...	9	--	9.5	40	<5	70	--
24...	9	20.0	6.3	30	<5	60	--
31...	9	--	40	130	30	200	30.0
31...	9	--	55	K10000	15	160	--
31...	9	20.0	23	75	20	110	--
AUG							
07...	9	--	9.2	220	25	260	20.0
07...	9	--	11	30	5	120	--
07...	9	20.0	7.8	60	10	80	--
08...	9	--	8.3	1400	55	2400	20.0
08...	9	--	9.9	1800	130	3500	--
08...	9	20.0	6.1	1000	55	2100	--
09...	9	--	5.4	180	30	180	20.0
09...	9	25.0	5.4	180	30	180	--
09...	9	--	14	180	15	3400	--
10...	9	--	4.9	2400	65	2900	30.0
10...	9	--	7.9	2000	195	2800	--
10...	9	30.0	5.4	1900	350	5900	--
14...	9	--	6.8	240	65	820	30.0
14...	9	--	16	75	<5	80	--
14...	9	30.0	7.7	240	5	240	--
21...	9	--	7.6	180	35	230	57.0
21...	9	--	8.5	420	45	670	--
21...	9	25.0	8.5	420	45	670	--
28...	9	--	7.1	290	30	900	20.0
28...	9	--	39	280	20	650	--
28...	9	20.0	7.7	220	5	540	--
29...	9	--	11	750	235	3600	20.0
29...	9	--	12	2300	90	2600	--
29...	R	--	12	140	60	1900	--
29...	9	20.0	10	39000	1060	50000	--
30...	9	--	10	70	85	620	20.0
30...	9	--	14	260	685	3900	--
30...	9	20.0	7.5	100	60	680	--
SEP							
04...	9	--	8.9	3100	40	3100	30.0
04...	9	--	12	180	<5	740	--
04...	9	30.0	12	9200	150	13000	--
18...	9	--	8.1	25	10	75	30.0
18...	9	--	13	5	5	10	--
18...	9	30.0	6.9	40	10	45	--
25...	9	--	9.8	1900	65	18000	40.0
25...	9	50.0	9.4	1600	10	16000	--
25...	9	--	12	960	<5	810	--
26...	9	--	12	1300	35	2800	60.0
26...	9	70.0	8.6	340	20	620	--
26...	9	--	11	870	5	880	--
27...	9	--	9.2	260	10	280	60.0
27...	R	--	9.2	320	5	270	60.0
27...	9	60.0	7.2	240	15	180	--
27...	9	--	8.7	500	10	230	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03086000 OHIO RIVER AT SEWICKLEY, PA

LOCATION--Lat 40°32'57", long 80°12'21", Allegheny County, Hydrologic Unit 05030101, 50 ft upstream from Dashields Dam, 1.0 mi downstream from Narrows Run, 1.0 mi northwest of Sewickley, and 13.3 mi downstream from confluence of Allegheny and Monongahela Rivers.

DRAINAGE AREA--19,500 mi², approximately.

REMARKS--Other data for this station can be found on pages 142-153.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	MEDIUM CODE	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SAMPLE LOC- ATION, CROSS SECTION (FT FM R BK) (72103)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SAMPLE LOC- ATION, CROSS SECTION (FT FM L BANK) (00009)
JUL									
12...	1010	9	22600	--	--	7.7	349	26.0	20.0
12...	1100	9	22600	--	--	7.7	340	26.0	--
12...	1115	9	22600	20.0	--	7.6	350	27.0	--
18...	1005	9	8200	--	9.4	7.9	382	26.0	50.0
18...	1015	9	8200	--	--	7.7	387	26.0	--
18...	1030	9	8200	35.0	--	7.8	384	26.0	--
24...	0940	9	8300	--	9.0	7.9	372	28.5	50.0
24...	0950	9	8300	1000	--	8.0	372	28.5	--
24...	1000	9	8300	740.0	--	8.0	370	28.5	--
24...	1010	9	8300	480.0	--	8.0	367	28.5	--
24...	1020	9	8300	250.0	--	8.0	361	28.5	--
24...	1030	9	8300	--	--	8.0	370	28.5	--
24...	1035	9	8300	50.0	--	7.9	360	28.5	--
31...	0955	9	26300	--	9.8	7.8	292	28.0	30.0
31...	1025	9	26300	--	--	7.8	306	28.0	--
31...	1043	9	26300	25.0	--	7.9	310	27.5	--
AUG									
07...	1000	9	11400	--	9.8	7.6	318	28.0	65.0
07...	1020	9	11400	--	--	7.7	328	26.0	--
07...	1045	9	11400	20.0	--	7.7	328	28.0	--
08...	1000	9	11600	--	--	7.9	360	28.5	65.0
08...	1015	9	11600	--	--	8.0	345	28.5	--
08...	1040	9	11600	20.0	10.7	7.8	358	28.5	--
09...	0930	9	8110	--	9.5	7.9	368	31.5	65.0
09...	0950	9	8110	--	--	7.8	355	32.0	--
09...	0958	9	8110	40.0	--	7.7	348	31.0	--
10...	1005	9	8990	--	9.4	7.8	363	31.5	60.0
10...	1100	9	8990	--	--	7.7	353	31.5	--
10...	1110	9	8990	40.0	--	7.6	336	31.5	--
14...	0850	9	19600	--	9.2	7.2	365	20.5	40.0
14...	0910	9	19600	--	--	7.3	352	19.5	--
14...	0925	9	19600	40.0	--	7.4	351	19.5	--
21...	1235	9	6480	--	7.2	7.2	375	17.5	70.0
21...	1250	9	6480	--	--	7.4	367	17.5	--
21...	1305	9	6480	40.0	--	7.6	364	17.5	--
28...	0950	9	14300	--	10.7	6.7	390	27.0	50.0
28...	0956	9	14300	1010	--	6.9	387	27.0	--
28...	1010	9	14300	750.0	--	6.9	387	27.0	--
28...	1015	9	14300	--	--	6.9	387	27.0	--
28...	1020	9	14300	480.0	--	6.9	387	27.0	--
28...	1025	9	14300	250.0	--	6.9	387	27.0	--
28...	1035	9	14300	20.0	--	6.5	396	27.0	--
29...	0942	9	13000	--	10.9	7.3	361	30.0	30.0
29...	1000	9	13000	--	--	7.5	357	26.0	--
29...	1020	9	13000	60.0	--	7.6	347	30.5	--
30...	0915	9	9400	--	10.1	7.5	377	26.0	50.0
30...	0930	9	9400	--	--	7.6	372	26.0	--
30...	0940	9	9400	40.0	--	7.5	368	26.0	--
SEP									
04...	0955	9	9600	--	9.9	6.8	407	22.5	60.0
04...	1015	9	9600	--	--	7.0	392	26.0	--
04...	1025	9	9600	50.0	--	7.0	393	26.0	--
26...	0900	9	11500	--	8.8	7.6	455	21.0	50.0
26...	1010	9	11500	--	--	7.6	457	21.0	243
26...	1017	9	11500	--	--	7.6	457	21.0	453
26...	1021	9	11500	--	--	7.6	457	21.0	768
26...	1025	9	11500	--	--	7.6	457	21.0	1010
26...	1030	9	11500	--	--	7.6	457	21.0	--
26...	1040	9	11500	50.0	8.9	7.7	455	21.0	--
28...	0845	9	8380	--	9.3	7.8	427	20.0	30.0
28...	0930	9	8380	--	--	7.7	423	20.0	--
28...	1015	9	8380	20.0	9.5	7.9	423	20.0	--

**ANALYSIS OF STREAMFLOW SAMPLES COLLECTED AT SPECIAL-STUDY SITES
FECAL-INDICATOR BACTERIA PROJECT--Continued**

03086000 OHIO RIVER AT SEWICKLEY, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MEDIUM CODE	SAMPLE LOCATION, CROSS SECTION (FT FM R BK) (72103)	TURBIDITY (NTU) (00076)	E COLI, MTEC MF WATER (COL/ 100 ML) (31633)	ENTEROCOCCI, ME MF, WATER (COL/ 100 ML) (31649)	FECAL COLI-FORM, MFC MF, WATER (COL/ 100 ML) (31616)	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)
JUL							
12...	9	--	18	450	120	640	20.0
12...	9	--	25	280	45	700	--
12...	9	20.0	11	260	55	420	--
18...	9	--	11	160	140	200	50.0
18...	9	--	11	6	5	50	--
18...	9	35.0	6.8	45	<5	85	--
24...	9	--	7.6	300	200	230	50.0
24...	9	1000	8.9	15	<5	40	--
24...	9	740.0	10	40	<5	15	--
24...	9	480.0	13	90	15	120	--
24...	9	250.0	11	5	<5	15	--
24...	9	--	11	<5	10	20	--
24...	9	50.0	6.7	15	<5	15	--
31...	9	--	16	65	35	100	30.0
31...	9	--	32	20	<5	120	--
31...	9	25.0	11	160	60	200	--
AUG							
07...	9	--	9.9	75	25	100	65.0
07...	9	--	14	40	15	95	--
07...	9	20.0	10	45	10	100	--
08...	9	--	14	200	260	700	65.0
08...	9	--	26	1300	350	650	--
08...	9	20.0	15	760	540	590	--
09...	9	--	50	900	595	1600	65.0
09...	9	--	23	400	115	580	--
09...	9	40.0	17	520	25	960	--
10...	9	--	10	300	65	870	60.0
10...	9	--	15	420	70	250	--
10...	9	40.0	8.7	260	50	560	--
14...	9	--	9.4	460	15	560	40.0
14...	9	--	12	460	10	560	--
14...	9	40.0	6.4	500	20	660	--
21...	9	--	5.4	15	5	40	70.0
21...	9	--	9.6	10	5	25	--
21...	9	40.0	5.7	15	5	25	--
28...	9	--	12	130	55	420	50.0
28...	9	1010	--	110	20	130	--
28...	9	750.0	--	490	15	100	--
28...	9	--	13	240	10	760	--
28...	9	480.0	--	260	5	170	--
28...	9	250.0	--	140	5	220	--
28...	9	20.0	6.9	320	25	160	--
29...	9	--	40	100	705	3100	30.0
29...	9	--	37	2300	310	2200	--
29...	9	60.0	26	1400	400	1700	--
30...	9	--	19	40	65	890	50.0
30...	9	--	24	2300	180	770	--
30...	9	40.0	21	40	135	8	--
SEP							
04...	9	--	11	10	15	120	60.0
04...	9	--	14	100	<5	120	--
04...	9	50.0	9.7	80	5	100	--
26...	9	--	10	1900	35	2700	50.0
26...	9	--	--	600	15	2600	243
26...	9	--	--	440	10	420	453
26...	9	--	--	2100	50	4700	768
26...	9	--	--	2100	10	3100	1010
26...	9	--	13	2000	20	3200	--
26...	9	50.0	10	2200	30	3600	--
28...	9	--	11	120	5	240	30.0
28...	9	--	13	140	15	230	--
28...	9	20.0	12	3100	10	3100	--