

## CHRISTINA RIVER BASIN

01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA  
(New Garden Township, Chester County, Spray Irrigation Project)

**LOCATION.**--Lat 39°50'52", long 75°43'42", Chester County, Hydrologic unit 02040205, 125 ft upstream from station 01479678, and 725 ft upstream from confluence with West Branch Red Clay Creek, at Kennett Square Borough.

**DRAINAGE AREA.**--0.03 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

**PERIOD OF RECORD.**--July 1999 to current year.

**GAGE.**--Water-stage recorder. Elevation of gage is 335 ft above sea level, from topographic map.

**REMARKS.**--Records poor. Other data for this project presented in tables on pages 368-389 and 447-484.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.033	.017	.019	e.012	.030	.011	.014	.011	.014	.014	.016	.016
2	.034	.017	e.017	e.005	.036	.011	.011	.012	.016	.013	.016	.019
3	.034	.017	e.014	e.007	e.020	.011	.011	.017	.013	.013	.018	.020
4	.036	.020	e.014	e.011	e.010	.014	.011	.016	.012	.014	.020	.052
5	.040	.021	e.014	e.012	e.400	.019	.011	.014	.011	.013	.019	.022
6	.035	.021	e.013	e.013	.035	.017	.011	.013	.011	.012	.017	.020
7	.032	.021	e.013	e.014	.069	.018	.010	.011	.011	.011	.017	.019
8	.030	.021	e.016	e.010	.029	.017	.008	.008	.011	.013	.015	.020
9	.031	.022	e.017	e.005	.022	.017	.009	.008	.011	.013	.016	.020
10	.029	.046	e.017	e.007	.020	.013	.010	.011	.013	.168	.043	.022
11	.027	.030	.017	e.010	e.014	.010	.014	.015	.116	.015	.059	.020
12	.024	.026	.018	e.009	e.014	.010	.014	.018	.031	.011	.091	.020
13	.023	.026	.021	e.007	.015	.022	.011	.021	.011	.010	.028	.020
14	.023	.035	.077	e.007	.015	.008	.009	.019	.011	.011	.022	.028
15	.023	.019	.030	e.005	.015	.012	.009	.016	.014	.011	.020	.023
16	.025	.017	.033	e.010	.020	.021	.013	.015	.233	.012	.020	.021
17	.025	.017	.609	e.013	.019	.017	.011	.014	.035	.013	.020	.023
18	.031	.017	.023	e.011	e.010	.011	.012	.017	.013	.014	.021	.023
19	.027	.017	e.015	.580	e.010	.009	.013	.017	.011	.015	.021	.019
20	.025	.018	e.010	.206	.012	.008	.012	.017	.011	.013	.023	.134
21	.025	.017	e.015	.025	.013	.073	.011	.019	.014	.016	.020	.035
22	.024	.017	e.010	e.015	e.008	.013	.011	.016	.015	.017	.019	.024
23	.025	.017	e.010	e.010	.014	.008	.010	.012	.017	.016	.022	.023
24	.027	.017	e.010	e.015	.012	.010	.008	.011	.017	.016	.020	.036
25	.026	.017	e.010	e.010	.022	.011	.008	.011	.014	.017	.020	.046
26	.023	.073	e.005	e.010	.018	.011	.008	.024	.009	.018	.020	.020
27	.023	.022	e.005	e.014	.012	.011	.008	.022	.009	.019	.021	.020
28	.024	.018	e.005	e.011	.011	.013	.008	.009	.008	.019	.019	.019
29	.019	.019	e.010	e.010	---	.017	.009	.008	.008	.022	.017	.020
30	.020	.022	e.010	e.430	---	.175	.011	.008	.010	.020	.018	.020
31	.019	---	e.010	e.030	---	.018	---	.010	---	.017	.017	---
TOTAL	0.842	0.684	1.107	1.534	0.925	0.636	0.316	0.440	0.730	0.606	0.735	0.824
MEAN	.027	.023	.036	.049	.033	.021	.011	.014	.024	.020	.024	.027
MAX	.040	.073	.609	.580	.400	.175	.014	.024	.233	.168	.091	.134
MIN	.019	.017	.005	.005	.008	.008	.008	.008	.008	.010	.015	.016

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2001, BY WATER YEAR (WY)

MEAN	.028	.026	.035	.038	.046	.042	.030	.035	.038	.042	.027	.056
MAX (WY)	.029	.029	.035	.049	.060	.064	.050	.056	.053	.065	.050	.092
MIN (WY)	2000	2000	2000	2001	2000	2000	2000	2000	2000	2000	2000	1999
MIN (WY)	.027	.024	.035	.028	.032	.020	.010	.014	.024	.019	.005	.027
(WY)	2001	2001	2001	2000	2001	2001	2001	2001	2001	2001	1999	2001

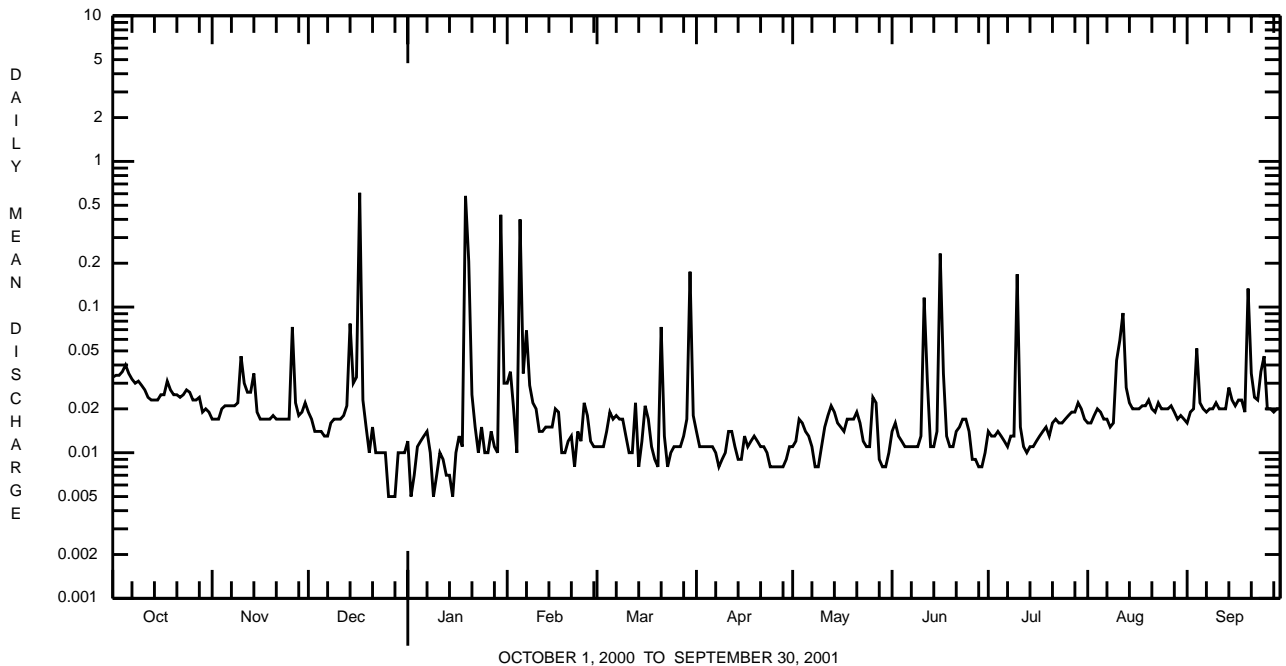
e Estimated.

CHRISTINA RIVER BASIN

01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA--Continued  
(New Garden Township, Chester County, Spray Irrigation Project)

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR	FOR 2001 WATER YEAR	WATER YEARS 1999 - 2001	
ANNUAL TOTAL	16.953	9.379		
ANNUAL MEAN	.046	.026	.036	
HIGHEST ANNUAL MEAN			.047	2000
LOWEST ANNUAL MEAN			.025	2001
HIGHEST DAILY MEAN	.609 Dec 17	.609 Dec 17	2.3	Sep 16 1999
LOWEST DAILY MEAN	<b>e</b> .005 Dec 26-28	<b>e</b> .005 Dec 26-28 <b>a</b>	.000	Jul 7 1999
ANNUAL SEVEN-DAY MINIMUM	<b>b</b> .01 Dec 22	<b>b</b> .01 Jan 9	.00	Jul 7 1999
MAXIMUM PEAK FLOW		4.2 Dec 17	13	Sep 16 1999
MAXIMUM PEAK STAGE		2.29 Dec 17	2.54	Sep 16 1999
INSTANTANEOUS LOW FLOW			.00	Jul 6 1999
10 PERCENT EXCEEDS	.07	.03	.06	
50 PERCENT EXCEEDS	.04	.02	.02	
90 PERCENT EXCEEDS	.02	.01	.01	

- a** Also Jan. 2, 9, 15.
- b** Computed using estimated daily discharges.
- e** Estimated.



## CHRISTINA RIVER BASIN

01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA--Continued  
(New Garden Township, Chester County, Spray Irrigation Project)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1999 to current year.

INSTRUMENTATION.--Automatic pumping sampler for stormflow events since September 1999. Sample intakes are located in flume.

REMARKS.-- Two types of samples are collected at this station. Grab samples are collected at the outlet of the flume. These are samples with one date in the table below. Samples with two dates are composited stormflow samples. Constituent values for stormflow water quality are for discharge-weighted composited samples; sample time is the composite start time, discharge is the mean for the composited period. Some values for "dissolved" parameters exceed values for the corresponding "total" parameter and some values for dissolved ortho-phosphorus exceed values for dissolved and total phosphorus. For one sample, the summation of nitrogen species exceeds the analytical values for dissolved and total nitrogen. One value for dissolved iron exceeds value for total iron. These results are within the limits of analytical precision and methods. Other data for this project are presented in tables on pages 368-389 and 447-484.

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

DATE	TIME	AGENCY ANA- LYZING SAMPLE NUMBER (00028)	AGENCY COL- LECTING SAMPLE NUMBER (00027)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	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)
OCT 2000									
03...	0930	9813	1028	--	.04	6.2	6.8	383	13.2
12...	0800	9813	1028	--	.03	--	7.0	400	--
26...	0830	9813	1028	--	.02	8.8	6.0	395	11.2
31...	0900	9813	1028	--	.02	9.6	6.3	367	9.8
NOV									
10-10	0444	9813	1028	.14	--	--	--	--	--
16...	0900	9813	1028	--	.02	12.4	6.4	400	7.3
30...	0910	9813	1028	--	.02	--	6.9	396	--
DEC									
14-14	0444	9813	1028	.20	--	--	6.5	215	--
21...	0820	9813	1028	--	.02	--	6.7	377	--
JAN 2001									
11...	1040	9813	1028	--	.01	--	6.7	342	--
11...	1041	80020	1028	--	.01	--	--	--	--
29...	0900	9813	1028	--	.01	9.5	6.3	359	1.7
JAN									
30-30	1106	9813	1028	E.08	--	--	--	--	--
JAN									
30-30	1200	9813	1028	E.78	--	--	--	--	--
JAN									
30-30	1304	9813	1028	E1.2	--	--	--	--	--
JAN									
30-30	1408	9813	1028	E.65	--	--	--	--	--
JAN									
30-30	1512	9813	1028	E.40	--	--	--	--	--
JAN									
30-30	1616	9813	1028	E.20	--	--	--	--	--
FEB									
07-07	1404	9813	1028	.21	--	--	6.7	178	--
FEB									
08-08	1448	9813	1028	.08	--	--	7.0	256	--
20...	0845	9813	1028	--	.01	12.0	7.9	310	4.1
MAR									
14...	1400	9813	1028	--	.01	--	5.9	330	--
20...	1135	9813	1028	--	.01	11.6	6.0	334	10.2
MAR									
21-21	1312	9813	1028	.22	--	--	--	--	--
MAR									
30-30	0008	9813	1028	.41	--	--	--	--	--
APR									
04...	0900	9813	1028	--	.01	11.0	6.8	319	7.3
25...	0830	9813	1028	--	.01	--	6.2	320	--
MAY									
07...	0930	9813	1028	--	.01	8.6	6.3	310	10.2
24...	0810	9813	1028	--	.01	--	6.6	328	--
31...	0900	9813	1028	--	.01	7.5	6.5	324	11.2
31...	0901	9813	1028	--	.01	7.5	6.5	324	11.2
JUN									
11...	0900	9813	1028	--	.01	6.2	6.5	331	13.9
JUN									
11-12	2231	9813	1028	.64	--	--	--	--	--
JUN									
16-16	1500	9813	1028	1.0	--	--	--	--	--
28...	0930	9813	1028	--	.01	5.7	6.3	345	17.3
JUL									
10...	0945	9813	1028	--	.01	5.2	6.4	371	17.5
JUL									
10-10	1615	9813	1028	.97	--	--	--	--	--
18...	0830	9813	1028	--	.02	4.0	6.4	388	16.9
AUG									
08...	0900	9813	1028	--	.02	--	6.7	422	--
AUG									
10-10	1443	9813	1028	.16	--	--	--	--	--
16...	0815	9813	1028	--	.02	--	6.8	423	--
SEP									
14-14	0719	9813	1028	.05	--	--	--	--	--
20...	0825	9813	1028	--	.03	--	6.3	444	17.4
SEP									
20-20	1310	9813	1028	.10	--	--	--	--	--

## CHRISTINA RIVER BASIN

## 01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA--Continued

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

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, TOTAL AMMONIA (MG/L AS N) (00610)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 2000									
03...	32.2	<.020	<.02	.77	.350	<.040	.78	.043	.037
12...	37.6	<.020	<.02	.82	.420	<.040	.78	.032	.035
26...	39.6	<.020	<.02	.74	.440	<.040	.75	.036	.039
31...	37.4	<.020	<.02	.82	.530	<.040	.86	.035	.038
NOV									
10-10	47.1	.030	.03	1.4	.270	<.040	2.1	.160	.150
16...	39.8	<.020	<.02	.98	.660	<.040	.98	.043	.044
30...	39.3	<.020	<.02	.93	.620	<.040	.93	.044	.053
DEC									
14-14	20.5	.130	.14	1.6	.520	<.040	1.9	.350	.330
21...	40.8	<.020	<.02	1.4	.870	<.040	1.2	.045	.049
JAN 2001									
11...	38.9	<.020	<.02	1.3	.990	<.040	1.4	.023	.025
11...	--	--	--	--	--	--	--	--	--
29...	36.5	<.020	<.02	1.6	1.12	<.040	1.4	.042	.011
JAN									
30-30	3.6	.250	.28	.27	.240	<.040	.32	--	--
JAN									
30-30	2.2	.190	.20	1.0	.160	<.040	1.4	--	--
JAN									
30-30	3.4	.140	.15	.94	.130	<.040	1.4	--	--
JAN									
30-30	3.2	.150	.16	1.0	.090	<.040	1.4	--	--
JAN									
30-30	3.8	.140	.15	1.1	.090	<.040	1.4	--	--
JAN									
30-30	4.7	.120	.13	1.1	.110	<.040	1.5	--	--
FEB									
07-07	7.0	.080	.06	--	.180	<.040	1.2	--	--
FEB									
08-08	22.6	.030	.03	--	.630	<.040	1.1	.040	.023
20...	33.3	<.020	<.02	1.4	1.03	<.040	1.4	.025	.027
MAR									
14...	33.7	<.020	<.02	1.1	.830	<.040	.69	.014	.015
20...	34.8	<.020	<.02	1.3	.990	<.040	1.3	--	--
MAR									
21-21	4.3	.030	.04	1.1	.180	<.040	1.6	--	--
MAR									
30-30	3.6	.050	.05	.85	.210	<.040	1.2	.151	.134
APR									
04...	32.7	<.020	<.02	1.2	.850	<.040	1.3	.017	.014
25...	34.1	<.020	<.02	.74	.470	<.040	.80	--	--
MAY									
07...	34.2	<.020	<.02	.53	.140	<.040	--	<.010	<.010
24...	33.8	<.020	<.02	.67	.420	<.040	.67	.015	.012
31...	33.0	<.020	<.02	.53	.330	<.040	.53	.020	.016
31...	32.1	<.020	<.02	.51	.320	<.040	.51	.017	.017
JUN									
11...	34.9	<.020	<.02	.70	.490	<.040	.67	.017	.024
JUN									
11-12	18.1	.380	.40	3.3	1.21	<.040	3.3	1.13	1.07
JUN									
16-16	9.0	.420	.43	2.4	.410	.080	2.8	.708	.653
28...	35.3	<.020	<.02	.42	.250	<.040	.43	.027	.023
JUL									
10...	37.2	<.020	<.02	.46	.100	<.040	.48	.033	.020
JUL									
10-10	8.1	.120	.14	1.9	.860	<.040	2.5	.860	.768
18...	37.8	<.020	<.02	.37	.060	<.040	.42	.023	.015
AUG									
08...	43.1	<.020	<.02	.50	.050	<.040	.46	.033	.017
AUG									
10-10	57.6	.480	.51	3.8	.800	.240	4.0	.881	.829
16...	42.7	<.020	<.02	.59	.050	<.040	.64	.038	.032
SEP									
14-14	48.7	<.020	<.02	.64	.260	<.040	.78	.040	.027
20...	49.8	<.020	<.02	.40	.060	<.040	.46	.057	.024
SEP									
20-20	45.2	<.020	<.02	.98	.260	<.040	1.1	.097	.053

## CHRISTINA RIVER BASIN

01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA--Continued

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

DATE	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	BORON, DIS- SOLVED (µG/L AS B) (01020)	IRON, DIS- SOLVED (µG/L AS FE) (01046)	IRON, TOTAL RECOV- ERABLE (µG/L AS FE) (01045)	MANGA- NESE, DIS- SOLVED (µG/L AS MN) (01056)	MANGA- NESE, TOTAL RECOV- ERABLE (µG/L AS MN) (01055)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)	N15/N14 NO3 FRAC WATER FLTRD 0.45 µ PER MIL (82690)
OCT 2000									
03...	.050	3.4	--	<20	<20	28.0	43	<10	--
12...	.040	2.5	--	<20	<20	28.0	33	<10	--
26...	.040	--	--	--	--	--	--	<10	--
31...	.040	--	--	--	--	--	--	<10	--
NOV									
10-10	.370	18	--	50	530	12.0	171	10	--
16...	.050	2.4	--	<20	20	10.0	22	<10	--
30...	.060	--	--	--	--	--	--	<10	--
DEC									
14-14	.430	10	--	140	820	35.0	112	12	--
21...	.090	--	--	--	--	--	--	<10	--
JAN 2001									
11...	.040	--	--	--	--	--	--	<10	--
11...	--	--	--	--	--	--	--	--	11.80
29...	.040	1.6	--	<20	20	<10.0	<10	23	--
JAN									
30-30	--	--	<200	--	--	--	--	15	--
JAN									
30-30	--	--	<200	--	--	--	--	21	--
JAN									
30-30	--	--	<200	--	--	--	--	20	--
JAN									
30-30	--	--	<200	--	--	--	--	14	--
JAN									
30-30	--	--	<200	--	--	--	--	132	--
JAN									
30-30	--	--	<200	--	--	--	--	21	--
FEB									
07-07	--	8.9	<200	100	330	38.0	51	<10	--
FEB									
08-08	.060	--	--	--	--	--	--	<10	--
20...	.030	1.8	--	<20	20	<10.0	<10	<10	--
MAR									
14...	.020	--	--	--	--	--	--	<10	--
20...	--	2.0	<200	<20	<20	<10.0	<10	11	--
MAR									
21-21	--	8.6	<200	410	2910	10.0	69	17	--
MAR									
30-30	.250	--	--	--	--	--	--	<10	--
APR									
04...	.020	2.1	--	30	<20	<10.0	<10	12	--
25...	--	1.9	<200	<20	<20	26.0	26	<10	--
MAY									
07...	.020	2.0	--	<20	<20	<10.0	10	<10	--
24...	.030	1.9	--	<20	<20	<10.0	<10	<10	--
31...	.020	--	--	--	--	--	--	12	--
31...	.030	--	--	--	--	--	--	<10	--
JUN									
11...	.020	1.9	--	20	40	10.0	15	50	--
JUN									
11-12	1.93	--	--	--	--	--	--	12	--
JUN									
16-16	.840	17	--	110	1010	<10.0	79	14	--
28...	.040	--	--	--	--	--	--	<10	--
JUL									
10...	.020	2.6	--	<20	60	<10.0	<10	<10	--
JUL									
10-10	1.00	--	--	--	--	--	--	34	--
18...	.020	--	--	--	--	--	--	<10	--
AUG									
08...	.030	--	--	--	--	--	--	<10	--
AUG									
10-10	.990	24	--	110	410	<10.0	262	<10	--
16...	.030	4.3	--	<20	<20	171	198	<10	--
SEP									
14-14	.112	--	--	--	--	--	--	12	--
20...	.040	--	--	--	--	--	--	<10	--
SEP									
20-20	.160	8.3	--	30	420	<10.0	486	11	--

## CHRISTINA RIVER BASIN

01479676 RUNOFF TO UNNAMED TRIBUTARY TO WEST BRANCH RED CLAY CREEK AT KENNETT SQUARE, PA--Continued

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

DATE	TIME	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COLLECTING SAMPLE (CODE NUMBER) (00027)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	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)	
SEP 2001										
20-20	1743	9813	1028	.83	--	--	--	--	--	
27...	0750	9813	1028	--	.02	4.4	6.8	411	13.1	
DATE		CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN DIS- SOLVED (MG/L AS N) (00602)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
SEP 2001										
20-20	17.4	<.020	.02	.88	.140	<.040	1.1	.349	.292	
27...	45.0	<.020	<.02	.45	.040	<.040	.45	.029	.022	
DATE		PHOS- PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	IRON, DIS- SOLVED (µG/L AS FE) (01046)	IRON, TOTAL RECOV- ERABLE (µG/L AS FE) (01045)	MANGA- NESE, DIS- SOLVED (µG/L AS MN) (01056)	MANGA- NESE, TOTAL RECOV- ERABLE (µG/L AS MN) (01055)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)		
SEP 2001										
20-20		.420	--	--	--	--	--	12		
27...		.030	3.3	<20	20	11.0	15	<10		