

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT**

Traditionally, wastewater has been treated and discharged to streams. However, a rapidly growing suburban population in southeastern Pennsylvania is generating an increasing quantity of wastewater. Discharge to streams often degrades stream-water quality. A government-wide move is underway to limit the quantity of nutrients discharged to streams. In addition, many streams are being designated as high or exceptional value streams. An alternative to stream discharge is land application of treated effluent. An increasing number of communities in Pennsylvania are implementing land-treatment systems to dispose of treated sewage effluent. Disposal of treated effluent by spraying onto the land surface recharges the ground-water system and provides an extra purifying step in the wastewater treatment process and does not directly degrade stream-water quality.

The USGS, in cooperation with the Chester County Water Resources Authority and the Pennsylvania Department of Environmental Protection (PaDEP), conducted a study on the effects of treated sewage effluent sprayed on the land surface in New Garden Township, Chester County, Pennsylvania. New Garden Township did not contribute funding to the study, but graciously allowed the use of their spray-irrigation site as a study site. The New Garden Township site lies west of Kennett Square Borough just north of Baltimore Pike (fig. 10). The site covers approximately 58 acres. The PaDEP issued a permit for a maximum application rate of 300,000 gallons of effluent per day. Application began in May of 1999. The USGS collected data at the site through December 2001.

The objectives of this study were to determine the percentage of applied effluent that recharges the ground-water system and the percentage that was lost to evapotranspiration using a monthly water-budget approach, to characterize the effect of land treatment on ground-water and surface-water quality, and to determine the fate and transport of nitrogen as it moved from effluent into soil, soil water, ground water, crops and the atmosphere by determining and quantifying a nitrogen budget.

The site was intensively instrumented in order to reach project objectives. The USGS drilled 6 shallow (CH5173, CH5175, CH5177, CH5179, CH5180, and CH5181) and 4 bedrock wells (CH5172, CH5174, CH5176, and CH5178) at the New Garden Township site to monitor ground-water quality and ground-water-level fluctuations within the spray application area. A deep (CH5182) and shallow (CH5183) well pair acted as control wells outside the application area. Data for water year 2002 for these wells are presented in this report on pages 472-496. A system of suction lysimeters was installed at four locations in the application area with additional lysimeters installed as control lysimeters outside the application area (fig. 10). Lysimeters were installed at depths ranging from 3 to 15 feet. Lysimeter data are presented in this report, pages 428-435.

A surface-water flow-measuring station (01479678) was installed on the stream located downgradient in respect to ground-water-flow directions to measure the quantity of streamflow leaving the approximately 45 acre site (0.07 mi²). A stilling well was installed in a pond (station 01479677) downgradient of the spray fields to measure pond level fluctuations. A flume (station 01479676) was installed at the lowest elevation point of the field site above the pond. A swale directed overland flow from part of the study site (0.03 mi²) through the flume and stage was recorded electronically. Data for these surface-water sites can be found on pages 318-328.

Ground-water and surface-water sampling on a monthly basis were used to characterize changes in ground-water and surface-water quality. Storm samples were also collected using an automatic sampler at the flume station 01479676. Treated sewage effluent and precipitation were sampled on a monthly basis to quantify nutrient inputs to the site.

Other data collected electronically at the site included precipitation amounts, numerous other meteorological parameters such as wind speed and wind direction, soil moisture, and applied effluent. Soil and plant samples were collected in the application field and in control areas in order to determine the mass of nitrogen in the soil-plant system.

System design engineers and regulators are in need of data on monthly and seasonal variations in recharge and evapotranspiration for use in designing and managing spray irrigation systems. Quantifying monthly evapotranspiration rates will provide additional field data to assist regulators in permitting new spray irrigation systems. Results from the monthly water budgets could potentially change the present regulations regarding application rates. For water managers, the monthly water budgets could provide a ground-water recharge percentage for issuances of water-use credits. Assessments of nutrient loading to ground water and surface water would quantify the percentage of nutrients applied to the land surface that enters and moves through the ground-water system to the surface-water system.

For additional information, contact Curtis Schreffler at the U.S. Geological Survey, 215 Limekiln Road, New Cumberland, PA; 717-730-6900 (electronic mail: clschref@usgs.gov).

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued

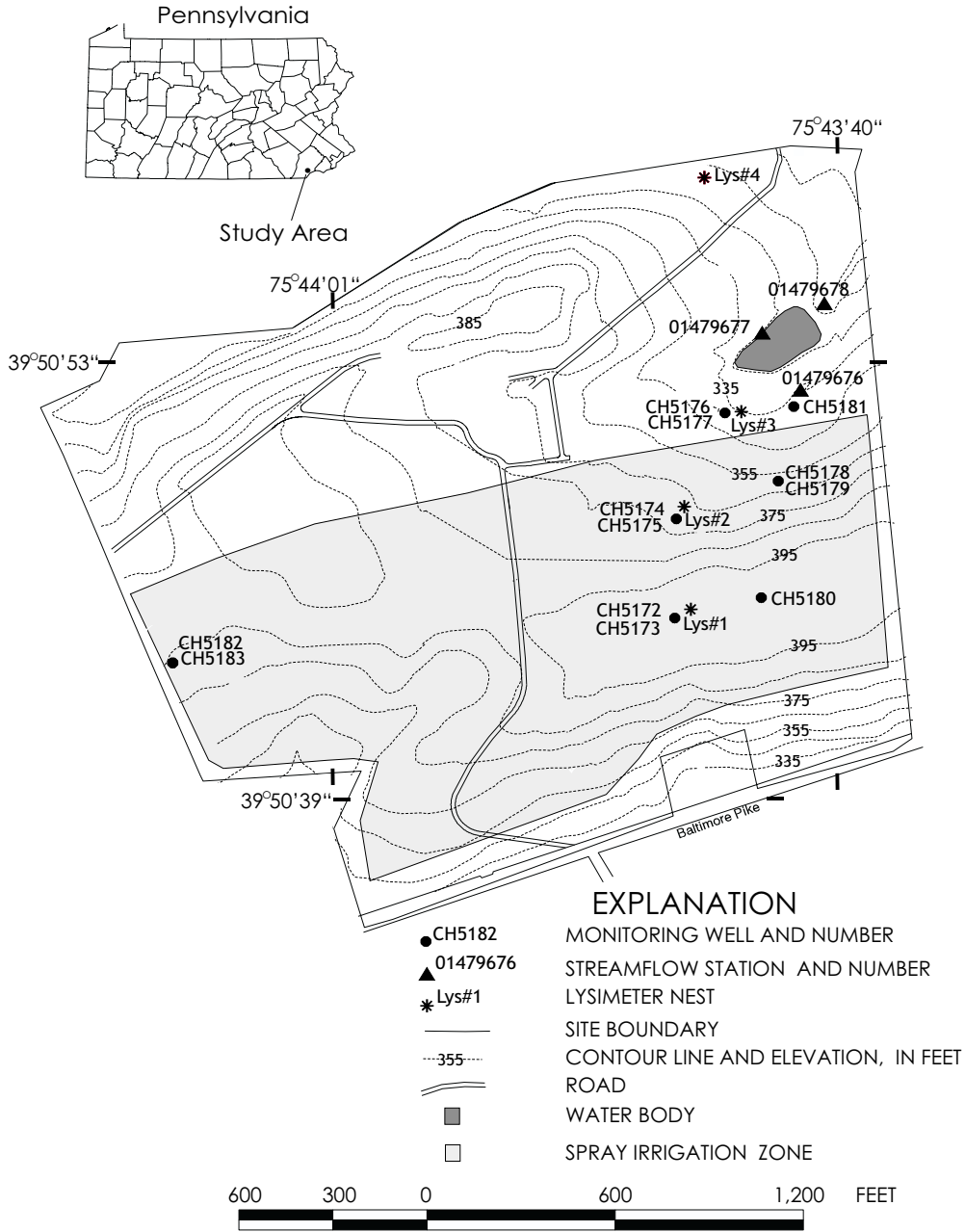


Figure 10.--Locations of ground-water wells, surface-water sites, and soil suction-lysimeter nests for the spray irrigation project in New Garden Township, Chester County.

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued

TABLE 4.--Description of soil suction lysimeters located at the Spray Irrigation Project site.

REMARKS.--Lysimeter locations Lys#1 and Lys#2 are located in the spray field. Lysimeter locations Lys#3 and Lys#4 are located outside of the spray zones. See figure 10 for location of lysimeters at field site.

LYSIMETER			LATITUDE	LONGITUDE	DEPTH
NEST	LOCAL	ID	(DEGREES)	(DEGREES)	OF WELL (FEET)
Lys#1	CH	5211	395045	0754347	3.0
	CH	5212	395045	0754347	7.0
	CH	5213	395045	0754347	11.0
Lys#2	CH	5215	395048	0754347	3.0
	CH	5216	395048	0754347	7.0
	CH	5217	395048	0754347	11.0
	CH	5218	395048	0754347	15.0
Lys#3	CH	5219	395052	0754345	3.0
	CH	5564	395052	0754345	6.0
	CH	5565	395052	0754345	9.5
	CH	5566	395052	0754345	13.0
Lys#4	CH	5568	395100	0754346	7.0
	CH	5570	395100	0754346	15.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395045075434703 -- CH 5211

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1015	9813	1028	--	6.2	437	--	53.6	<.020
NOV 29...	1030	9813	1028	--	--	--	--	58.7	<.020
DEC 12...	0800	9813	1028	227	--	--	7.3	63.4	<.020

Date	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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...		.34	.23	<.040	1.4	--
NOV 29...		.55	.17	<.040	--	--
DEC 12...		.44	.23	<.040	--	200

395045075434704 -- CH 5212

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1020	9813	1028	--	--	--	--	71.8	<.020
NOV 29...	1040	9813	1028	275	6.0	374	13.6	55.1	<.020
DEC 12...	0820	9813	1028	247	5.8	--	8.0	52.1	<.020

Date	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)
OCT 2001 11...		.78	.57
NOV 29...		.92	.67
DEC 12...		1.1	.71

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395045075434705 -- CH 5213

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1030	9813	1028	--	--	--	--	91.9	<.020
NOV 29...	1050	1028	1028	270	5.8	420	14.3	--	--
DEC 12...	0830	1028	1028	264	5.7	420	9.7	--	--

Date	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)
OCT 2001 11...	1.6	1.30	<.040
NOV 29...	--	--	--
DEC 12...	--	--	--

395048075434703 -- CH 5215

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1045	9813	1028	--	6.2	633	--	104	<.020
NOV 29...	1115	9813	1028	258	6.3	577	12.5	101	<.020
DEC 12...	0845	9813	1028	239	6.4	563	8.5	103	<.020

Date	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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	BORON, DIS- SOLVED (µG/L AS B) (01020)	IRON, DIS- SOLVED (µG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (µG/L AS MN) (01056)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...	1.3	.98	<.040	1.6	<200	30	<10	10
NOV 29...	2.0	1.57	<.040	--	<200	--	--	<10
DEC 12...	1.5	1.12	<.040	--	200	--	--	<10

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395048075434704 -- CH 5216

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1050	9813	1028	--	6.5	741	--	99.0	<.020
NOV 27...	0900	1028	1028	--	--	--	--	--	--
NOV 29...	1125	9813	1028	--	--	--	--	94.5	<.020
DEC 12...	0855	9813	1028	223	6.9	--	8.5	101	<.020

Date	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)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)	N15/N14 NO3 FRAC WATER FLTRD 0.45 µ PER MIL (82690)	
OCT 2001 11...		1.5	1.23	<.040	<200	<10	--
NOV 27...		--	--	--	--	--	14.50
NOV 29...		2.5	2.16	<.040	--	--	--
DEC 12...		3.2	2.60	<.040	200	10	--

395048075434705 -- CH 5217

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1100	9813	1028	--	6.3	514	--	88.5	<.020
NOV 29...	1135	9813	1028	275	6.3	--	14.6	80.9	<.020
DEC 12...	0905	9813	1028	205	6.4	--	9.9	91.6	<.020

Date	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)
OCT 2001 11...		2.2	1.93
NOV 29...		2.0	1.70
DEC 12...		1.9	1.49

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395048075434706 -- CH 5218

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1150	9813	1028	--	--	--	--	63.1	<.020
NOV 29...	1150	9813	1028	280	6.0	--	14.3	59.4	<.020
DEC 12...	0915	9813	1028	238	6.0	327	10.8	58.4	<.020

Date	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)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...		2.1	1.93	<.040	<200
NOV 29...		2.3	1.93	<.040	--
DEC 12...		2.5	1.91	<.040	--

395052075434503 -- CH 5219

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1230	9813	1028	--	6.1	304	--	.5	<.020
NOV 29...	1230	9813	1028	245	6.4	288	12.7	<.5	<.020
DEC 12...	0950	9813	1028	242	6.1	271	10.9	<.5	<.020

Date	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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	BORON, DIS- SOLVED (µG/L AS B) (01020)	IRON, DIS- SOLVED (µG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (µG/L AS MN) (01056)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...	.19	<.04	<.040	1.1	<200	<20	10	<10
NOV 29...	.20	<.04	<.040	--	<200	--	--	20
DEC 12...	.16	<.04	<.040	1.0	200	<20	<10	<10

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395052075434504 -- CH 5564

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1245	9813	1028	--	5.8	233	--	10.2	<.020
NOV 27...	0840	1028	1028	--	--	--	--	--	--
29...	1245	9813	1028	263	6.0	231	13.4	11.7	<.020
DEC 12...	1000	9813	1028	264	5.7	228	11.3	12.2	<.020

Date	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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	BORON, DIS- SOLVED (µG/L AS B) (01020)	IRON, DIS- SOLVED (µG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (µG/L AS MN) (01056)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)	N15/N14 NO3 FRAC WATER FLTRD 0.45 µ PER MIL (82690)
OCT 2001 11...	5.9	4.17	<.040	<1.0	<200	<20	<10	<10	--
NOV 27...	--	--	--	--	--	--	--	--	8.40
29...	3.4	3.05	<.040	<1.0	<200	<20	<10	<10	--
DEC 12...	3.7	2.96	<.040	<1.0	200	<20	<10	<10	--

395052075434505 -- CH 5565

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1300	9813	1028	--	--	--	--	24.2	<.020
NOV 29...	1255	9813	1028	247	6.4	--	14.2	27.9	<.020
DEC 12...	1010	9813	1028	264	6.1	340	12.1	31.5	<.020

Date	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)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...		3.6	3.28	<.040	<10
NOV 29...		4.0	3.24	<.040	--
DEC 12...		4.1	3.28	<.040	200

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

395052075434506 -- CH 5566

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
OCT 2001 11...	1310	9813	1028	--	6.1	318	--	25.6	<.020
NOV 29...	1300	9813	1028	266	5.7	323	14.7	28.0	<.020
DEC 12...	1020	9813	1028	274	5.9	314	12.6	30.4	<.020

Date	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)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...	3.6	3.20	<.040	<200	<10
NOV 29...	3.7	3.25	<.040	<200	<10
DEC 12...	4.1	3.25	<.040	200	<10

395100075434604 -- CH 5568

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
OCT 2001 11...	1330	9813	1028	--	--	--	--	.8
NOV 29...	1330	1028	1028	240	6.8	--	14.2	--
DEC 12...	1040	1028	1028	231	6.8	274	11.5	--

Date	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)	BORON, DIS- SOLVED (µG/L AS B) (01020)	ZINC, DIS- SOLVED (µG/L AS ZN) (01090)
OCT 2001 11...	3.6	3.20	<.040	<200	<10
NOV 29...	3.7	3.25	<.040	<200	<10
DEC 12...	4.1	3.25	<.040	200	<10

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
NEW GARDEN TOWNSHIP, CHESTER COUNTY, SPRAY IRRIGATION PROJECT--Continued**

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	OXID- ATION RED- UCTION POTEN- TIAL (MV) (00090)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (µS/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 2001 11...	1340	1028	1028	--	6.5	--	--
DEC 12...	1100	1028	1028	233	6.4	230	11.5