

# Water Quality Study

## Van Wert County

Results from samples collected January – December 2008

### Town Creek Nutrient Data

Nitrogen and Phosphorus concentrations at four locations in Town Creek

### Town Creek Pesticide Data

Pesticide concentrations for samples collected in June and November at three locations in Town Creek.

### Municipal and Township Well Pesticide Samples

Pesticide concentrations for June samples of six area municipalities and twelve rural wells.

### Van Wert County Ecoli Results

Ecoli Levels from streams leaving Van Wert County and Township wells.

### Rainfall Data

Amount of rainfall recorded prior to sampling day, and monthly totals for each year.

**A Grant from The Van Wert County Foundation**

### Municipal Pesticide Samples – 2008

Location	Atrazine	Alachlor	Metolachlor	Metribuzin	Propachlor	Propazine	Simazine	Nitrates (ppm)
Convoy	*	*	*	N/T	*	*	*	*
Delphos	0.9	*	*	N/T	*	*	*	4.59
Middle Point	*	*	*	N/T	*	*	*	*
Ohio City	*	*	*	N/T	*	*	*	*
Van Wert	*	*	*	N/T	*	*	*	2.59
Willshire	*	*	*	N/T	*	*	*	*

Results in ppm

The 2008 samples had detectable levels of nitrates in the Delphos and Van Wert sample. However, this is the first time Delphos has detectable levels of pesticides. Van Wert has always had detectable nitrates in it, and Delphos will probably start having them on a regular basis due to their source water now coming from the surface water and not deep wells. The concentration of nitrates present did not exceed the EPA's HAL of 10ppm.

### Township Wells Pesticide Samples – 2008

Location	Alachlor	Atrazine	Metolachlor	Metribuzin	Propachlor	Propazine	Simazine	Nitrates (ppm)
Union	*	*	*	N/T	*	*	*	*
Pleasant	*	*	*	N/T	*	*	*	*
Tully	*	*	*	N/T	*	*	*	*
Harrison	*	*	*	N/T	*	*	*	*
Willshire	*	*	*	N/T	*	*	*	*
Liberty	*	*	*	N/T	*	*	*	*
York	*	*	*	N/T	*	*	*	*
Jennings	*	*	*	N/T	*	*	*	*
Ridge	*	*	*	N/T	*	*	*	*
Washington	*	*	*	N/T	*	*	*	*
Jackson	*	*	*	N/T	*	*	*	*
Hoaglin	*	*	*	N/T	*	*	*	*

Results in ppm

The samples collected in June 2008, contained no detectable levels of pesticides in the water.

Town Creek Pesticide Data 2008

Location	Date	Alachlor	Acetochlor	Atrazine	Carbofuran	Cyanazine	Fluchloralin	Metolachlor	Metribuzin	Pendimethalin	Propachlor	Simazine	Trifluralin
TC-1	Jun-08	*	*	4.6	*	*	*	2.3	*	*	*	*	*
TC-2	Jun-08	*	0.9	8.5	*	*	*	3.3	*	*	*	0.9	*
TC-3	Jun-08	*	2.9	19.8	*	*	*	8.9	1.4	*	*	1.8	*
TC-1	Nov-08	*	*	*	*	*	*	*	*	*	*	*	*
TC-2	Nov-08	*	*	*	*	*	*	*	*	*	*	*	*
TC-3	Nov-08	*	*	*	*	*	*	*	*	*	*	*	*

Only pesticides detected throughout the study are included

- = Sample was below the detection limit
- Sample results are in parts per million (ppm)

Comments:

Town Creek Pesticide samples for 2008 followed a similar pattern as previous years, with some pesticides present in the June samples. The concentrations found in the June 2008 samples are slightly above average with amounts of Acetochlor, Atrazine, Metolachlor, Metribuzin, and Simazine present. These concentrations might be the result of higher than normal levels of precipitation during late spring and early summer.

Total Nitrogen and Phosphorus 2008

Month	Nitrate (ppm)					Phosphate (ppm)				
	TC-1	TC-2	TC-3	TC-4	AVG.	TC-1	TC-2	TC-3	TC-4	AVG.
January	N/S	6.88	4.54	4.18	5.20	N/S	0.1	0.17	0.15	0.14
February	N/S	5.36	7.01	6.99	6.45	N/S	0	0.27	0.13	0.13
March	N/S	2.44	2.13	2.61	2.39	N/S	0.39	0.40	0.41	0.40
April	N/S	5.73	4.8	4.25	4.93	N/S	0.14	0.17	0.16	0.16
May	N/S	3.32	4.31	3.27	3.63	N/S	0	0.45	0.00	0.15
June	9.47	13.3	9.1	11.2	10.77	0.18	0	0.16	0.16	0.11
July	N/S	7.87	7.31	6.82	7.33	N/S	0.14	0.22	0.24	0.20
August	N/S	0	10.2	2.99	4.40	N/S	0.11	0.19	1.82	0.71
September	N/S	0	13.3	5.23	6.18	N/S	0.14	0.16	0.14	0.15
October	N/S	0	11.5	5.52	5.7	N/S	0.11	0.19	0.00	0.10
November	0	0	6.93	4.8	2.9	0.00	0.18	0.00	0.58	0.19
December	N/S	14.9	9.06	6.48	10.15	N/S	0.14	0.15	1.60	0.63

Nitrogen = nitrates + nitrites

Phosphorus=Total Phosphorus

N/S=Not sampled

Shaded boxes indicate values that exceed EPA's HAL of 10ppm Nitrogen.

Comments:

Nitrogen concentrations were above average starting in June comparing to other years of the study. This might be the result of less rain in the later ½ of the 2008 crop year. TC2 is upstream of the city of Van Wert and TC3 is directly downstream of the waste water treatment plant (most of the water flow in Town Creek came from the municipality). Phosphorus concentrations throughout 2008 were about average compared to the last couple of years.

Town Creek E. Coli Test col/100ml

	1-Jun-02	-Nov-02	3-Jun-03	3-Nov-03	1-Jun-04	1-Nov-04	1-Jun-05	1-Nov-05	1-Jun-06	1-Nov-06	1-Jun-07	1-Nov-07	1-Jun-08	1-Nov-08
Location	E.Coli/col/100ml													
TC1	390	630	*	300	2000	1920	4400	500	500	790	3800	0	1600	40
TC2	290	0	400	140	2000	1760	3800	500	200	1110	1400	6	3240	6
TC3	660	2390	1000	308	6000	2840	5200	14000	1800	2040	1600	1	3140	40
TC4	230	20	200	90	4000	3000	5600	300	600	1080	1700	28	2080	40

E.coli levels are hard to predict. The only factor that appears is that the E. coli levels are slightly higher downstream of Van Wert

Streams leaving Van Wert County (E.Coli Test)col/100ml

	1-Mar-06	3-Jun-06	3-Sep-06	1-Dec-06	1-Mar-07	3-Jun-07	3-Sep-07	1-Dec-07	3-Mar-08	3-Jun-08	3-Sep-08	1-Dec-08
Town Creek	0	600	13300	2600	15700	1700	100	5600	5400	2080	282	250
Maddox Creek	200	400	13900	3300	6200	400	800	3560	1700	1800	46	354
Hoaglin Creek	0	200	42400	800	2700	400	850	2400	960	1440	102	352
Hagerman Creek	400	200	39200	1500	1700	400	1500	1840	500	1520	48	334
Upper Prairie Creek	400	600	8000	1300	2200	400	1900	1660	280	1680		198
Middle Creek	800	500	20600	1200	1600	500	1350	1300	1240	1560	260	516
Blue Creek	0	200	19400	1100	1500	1100	2000	4360	660	1140	1380	28

The levels of E.coli are sporadic and somewhat inconsistent. They don't follow any weather related events.

<b>Location</b>	<b>Coliform 02</b>	<b>Ecoli 02</b>	<b>Coliform 03</b>	<b>Ecoli 03</b>	<b>Coliform 04</b>	<b>Ecoli 04</b>	<b>Coliform 05</b>	<b>Ecoli 05</b>	<b>Coliform 06</b>	<b>Ecoli 06</b>	<b>Coliform 07</b>	<b>Ecoli 07</b>	<b>Coliform 08</b>	<b>Ecoli 08</b>	<b>Year Dug</b>	<b>Depth</b>	<b>Casing</b>
Harrison	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	N/A	N/A	N/A
Hoaglin	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	1970's	40'	Metal
Jackson	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1987	52'	PVC
Jennings	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	1979	38'	Metal
Liberty	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	1974	108'	Metal
Pleasant	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1975	140'	Metal
Ridge	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	1939	85'	Galvanized

Location	Coliform 02	Ecoli 02	Coliform 03	Ecoli 03	Coliform 04	Ecoli 04	Coliform 05	Ecoli 05	Coliform 06	Ecoli 06	Coliform 07	Ecoli 07	Coliform 08	Ecoli 08	Year Dug	Depth	Casing
Tully	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	1978	105'	Iron
Union	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	N/A	N/A	N/A
Washington	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	Present	Absent	Absent	Absent	Present	Absent	1952	35'	Steel
Willshire	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	1979	88'	Steel
York	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent	N/A	N/A	Steel

Shaded boxes indicate values that Coliform was present.

The 2008 sample shows that no E.coli Bacteria were present in the wells during the June sample.

### Total Rain Fall in inches

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
<b>Jan.</b>	3.82	1.81	1.89	2.75	1.98	2.97	2.70	2.29	1.71	3.82	1.65	0.65	1.63	1.45	2.54	6.01	2.53	8.47	1.87	2.77
<b>Feb.</b>	6.40	0.94	1.20	1.60	0.70	0.75	0.36	3.70	1.53	1.94	1.45	2.18	2.51	2.42	0.41	1.07	2.24	0.8	3.57	1.88
<b>Mar.</b>	1.87	2.38	2.24	1.34	0.72	1.86	1.97	2.50	3.15	1.26	1.53	0.61	3.42	1.76	1.95	1.14	1.22	3.67	4.51	2.06
<b>Apr.</b>	1.89	3.87	4.09	5.21	4.43	4.70	4.37	0.78	5.03	5.11	1.51	3.43	3.71	2.07	0.64	3.26	2.62	4.36	3.41	3.39
<b>May</b>	5.28	3.94	2.53	3.04	1.77	4.24	5.21	4.58	3.23	2.13	4.98	5.78	5.56	8.18	5.69	1.31	4.2	1.18	5.1	4.10
<b>June</b>	3.47	0.12	2.09	8.68	5.27	4.95	4.65	3.79	7.56	3.64	9.23	2.61	2.4	4.55	5.54	2.91	2.81	0.85	6.66	4.30
<b>July</b>	8.95	2.87	6.79	5.65	4.39	2.19	8.30	8.33	4.28	3.19	1.86	3.65	3.03	8.81	9.45	3.04	5.95	1.14	3.33	5.01
<b>Aug.</b>	5.21	3.89	2.22	1.25	2.31	3.50	1.77	3.01	4.31	2.71	3.04	1.71	2.23	6.51	5.85	3.21	2.79	11.86	2.31	3.67
<b>Sept.</b>	3.28	1.66	1.66	4.11	0.62	0.43	2.42	5.53	0.80	1.59	5.32	6.29	2.77	4.79	2.31	5.06	2.46	2.75	2.35	2.96
<b>Oct.</b>	3.37	2.21	2.61	1.82	0.80	4.08	2.40	1.61	2.70	2.08	2.3	7.79	1.45	1.73	3.25	1.28	5.19	2.67	3.26	2.77
<b>Nov.</b>	2.31	1.05	5.51	4.13	3.56	2.63	5.56	2.74	1.89	1.25	1.9	7.76	2.91	2.99	3.66	3.19	1.65	3.85	2.44	3.21
<b>Dec.</b>	7.10	1.10	1.33	1.56	2.59	1.10	0.00	1.73	0.93	2.51	3.2	0.37	2.198	2.86	2.16	2.99	4.71	4.41	3.54	2.44
<b>Total</b>	52.95	25.84	34.16	41.14	29.14	33.40	39.71	40.59	37.12	31.23	37.97	42.83	33.82	48.12	43.45	34.47	38.37	46.01	42.35	38.56

**Comments:**

Rainfall data is reported because it may help explain pesticide and nutrient levels in town creek. High levels of precipitation can increase run-off and the amount of nitrogen, phosphorus and pesticides entering the stream.

**Rainfall (inches) Recorded prior to Sampling**

<b>2008</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>	<b>November</b>	<b>December</b>
<b>24 Hours</b>	0.00	0.14	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
<b>48 Hours</b>	0.00	0.02	0.00	0.55	0.45	1.92	0.14	0.00	0.00	0.00	0.00	0.00
<b>72 Hours</b>	0.00	0.06	1.40	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
<b>96 Hours</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.09	0.00	0.00
<b>Totals</b>	0.00	0.22	1.40	0.55	0.45	1.92	0.36	0.00	0.00	0.09	0.00	0.00

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