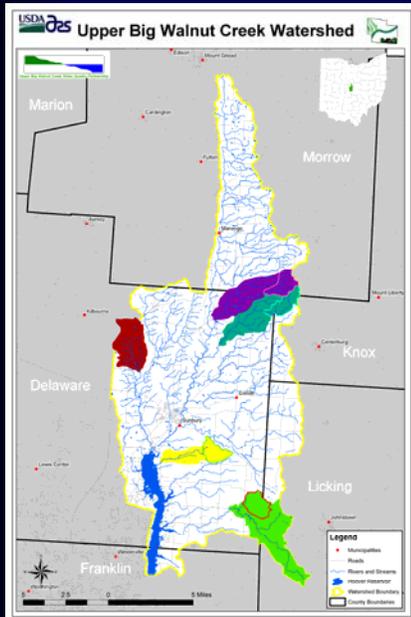


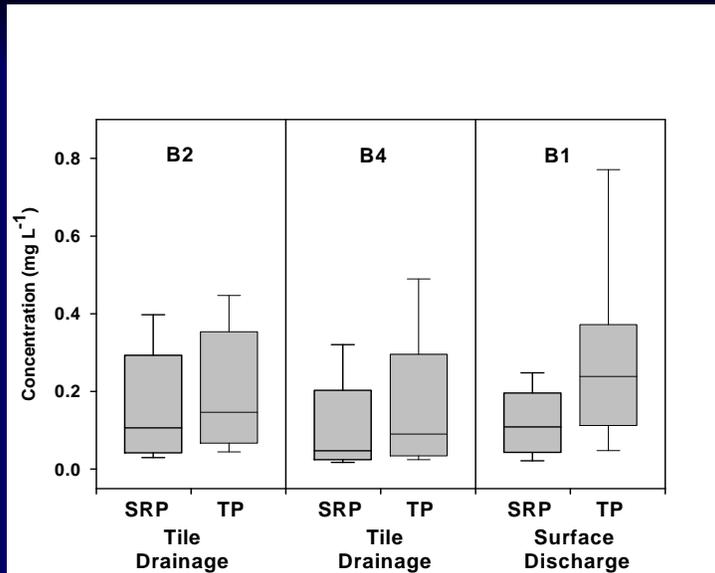
Upper Big Walnut Creek Watershed



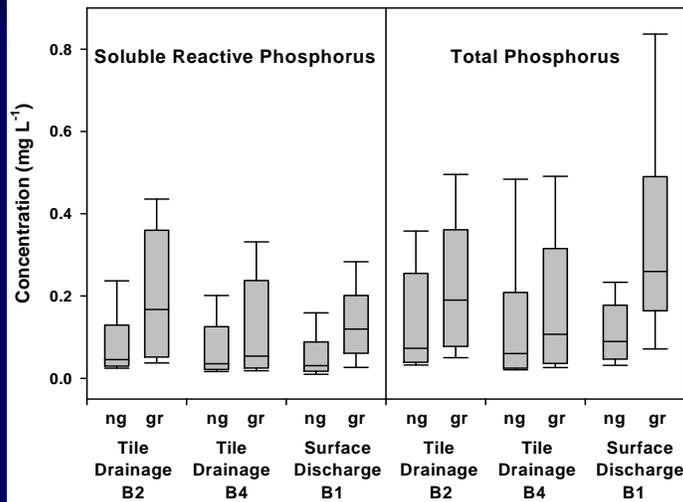
- > USGS 11-digit watershed (HUC 05060001-130)
- > 492 km² drainage area
- > 467 km of perennial and intermittent streams
- > drinking water supply for approx. 800,000
- > approx. 60% cropland
- > extensive portion systematically tile drained
- > clayey poorly drained soils
- > 160 growing days at 0 °C base temperature
- > normal rainfall is 985 mm (bimodal distribution)
- > OEPA (2004) priority impaired watershed

Aerial Photo of Subsurface Drainage Systems

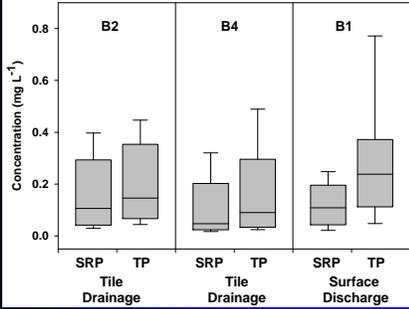




Measured SRP and TP concentrations (2005-2006) in subsurface and surface drainage waters of a headwater watershed in the Upper Big Walnut Creek Watershed. Boxes are bound by 25th and 75th percentile values; line in the box represents the median; whiskers represent the 10th and 90th percentiles.

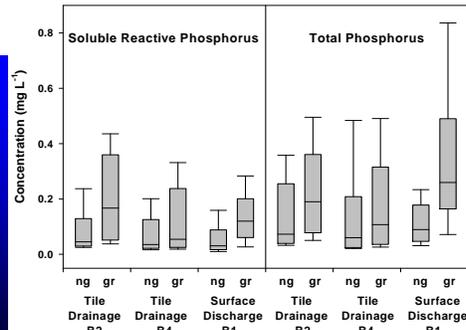


Non-growing season (ng) and growing season (gr) measured SRP and TP concentrations (2005-2006) in subsurface and surface drainage waters of a headwater watershed in the Upper Big Walnut Creek Watershed. Boxes are bound by 25th and 75th percentile values; line in the box represents the median; whiskers represent the 10th and 90th percentiles.



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Phosphorus Data from Castalia, Ohio 1969-1978 kg/ha

Year	shallow	deep	surface
1969		0.9	1.2
1970		0.8	8.3
1971		0.3	1.3
1972		2.4	2.5
1973		2.0	2.6
1974	0.8	1.2	1.2
1975	1.3	1.5	3.6
1976	0.4	0.4	0.2
1977	1.0	2.1	1.2
1978	0.3	0.6	0.3

Water Quality Results

1) Defiance County WRSIS Wetland: 2003 – 2006

	Average Concentration (mg/L)		
	Total Filterable Solids ¹	NO ₃ ⁻ -N	PO ₄ ³⁻ -P
Surface Runoff Entering Wetland	137.30	3.68	0.27
Subsurface Drainage Entering Wetland	92.04	8.76	0.18
Water Discharged From Wetland	51.20	1.97	0.11

¹ Total filterable solids represent the amount of sediment retained by a 0.22 μ m filter

2) Within the subirrigated fields at the Defiance County WRSIS site, soil water samples taken at a depth of 2 feet had an average NO₃-N concentration of 1.60 mg/L (median = 0.40 mg/L), while at a depth of 4 feet, the average NO₃-N concentration was 1.23 mg/L (median = 0.18 mg/L). This finding indicates that WRSIS operations will not have an adverse environmental impact on underlying aquifers, at least with respect to nitrate contamination.