

# Setting Nutrient Limits Based on Antidegradation

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# Ohio Background



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- Ohio does not have numeric criteria for nutrients
- Monthly average phosphorus limit of 1.0 mg/L for POTWs in the Lake Erie Basin
- Variety of different phosphorus limits throughout the state, typically ranging from 0.5 mg/L – 1.0 mg/L



# Antidegradation Background

- Federal regulations
- “Existing uses, which are determined using the use designations defined in rule 3745- 1-07 of the Administrative Code, and the level of water quality necessary to protect existing uses, shall be maintained and protected.”



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TP Conc. (mg/l)	DIN Concentration (mg/l)				
	<0.44	0.44 < 1.10	1.10 < 3.60	3.60 < 6.70	≥6.70
<0.040	background levels typical of least disturbed conditions (21.2% of observations)	levels typical of developed lands; little or no risk to beneficial uses (8.0% of observations)	levels typical of modestly enriched condition; low risk to beneficial use if allied responses are within normal ranges; high phosphorus uptake (5.2% of observations)	levels typical of enriched condition in phosphorus limited systems; moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.7% of observations)	characteristic of tile-drained lands; otherwise atypical condition with moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.2% of observations)
0.040- <0.080	levels typical of developed lands; little or no risk to beneficial uses (6.9% of observations)	levels typical of developed lands; little or no risk to beneficial uses if allied responses are normal (8.6% of observations)	levels typical of working landscapes; low risk to beneficial use if allied responses are within normal ranges (6.5% of observations)	levels typical of enriched condition in phosphorus limited systems; moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.9% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated (0.1% of observations)
0.080- <0.131	levels typical of modestly enriched condition with high nitrogen uptake; low risk to beneficial use if allied responses are within normal ranges (3.0% of observations)	levels typical of working landscapes; low risk to beneficial use if allied responses are within normal ranges (6.0% of observations)	levels typical of streams with a significant effluent fraction; low risk to beneficial use if allied responses are within normal ranges; pre-uptake condition (6.8% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated; increased risk with poor habitat – OR – large rivers with significant effluent fraction (0.9% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated (0.3% of observations)
0.131- <0.400	levels typical of enriched condition with high nitrogen uptake; elevated risk to beneficial use (2.7% of observations)	levels typical of enriched condition with high nitrogen uptake; elevated risk to beneficial use (4.5% of observations)	levels typical of streams with a significant effluent fraction; moderate risk to beneficial use if allied responses are within normal ranges; pre-uptake condition (10.6% of observations)	enriched condition; generally high risk to beneficial uses; often co-occurring with multiple stressors; increased risk with poor habitat (1.7% of observations)	enriched condition; generally high risk to beneficial uses; often co-occurring with multiple stressors (0.6% of observations)
≥0.400	high nitrogen uptake; atypical condition (0.2% of observations)	high nitrogen uptake; atypical condition (0.6% of observations);	typical of effluent dominated rivers; high risk (1.6% of observations)	enriched condition; high risk to beneficial uses; (1.2% of observations)	enriched condition; high risk to beneficial uses; often co-occurring with multiple stressors (1.0% of observations)

# Phosphorus and DIN Limits

- Calculate a WLA using 0.4 mg/L and 3.6 mg/L as targets
- Use D80 flow
- Take into account long term averaging
- Set permit limit to prevent loss of use

Example: Racoon Creek WWTP



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