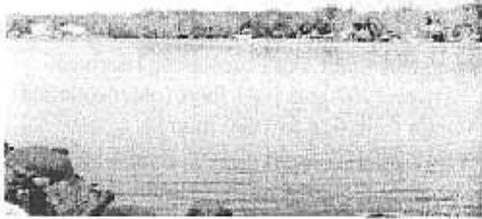


Lake Pocotopaug Update March 21, 2006



ENR

2005 Activity

1. Storm water assessment with upstream-downstream comparison
2. Assimilation of historic information into our database for this system

ENR

Storm Water Assessment

- Passive samplers positioned prior after dry weather period and before expected storm
- Samplers collected runoff from storm that occurred Sunday, November 6, 2005
- Samples tested in the lab for two forms of nitrogen (N) and two forms of phosphorus (P)

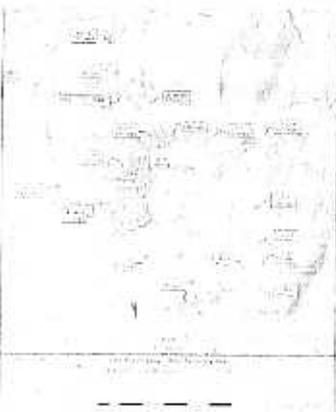


ENR



Storm Water Assessment Stations

ENR



Storm Water Assessment

Total P:
0.53-4.75 mg/L

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Concentration vs. Load

- The concentration is the amount in a standard volume of water at any instant in time.
- The load is the concentration multiplied by the amount of water believed to have that concentration
- The load is more critical to lake condition

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Loading to Lake Pocotopaug

- Empirical models allow input of available data and prediction of either the concentration that results from a load or the load that would be necessary to yield a known concentration
- Application of this approach suggests that Lake Pocotopaug behaves as though it receives 495 to 1382 lb/yr (average = 911 lb/yr)
- Actual load likely to be somewhat higher

ENR

Loading to Lake Pocotopaug

- Available data allows estimation of loads from actual measurements, with a number of assumptions
- Application of this approach recently suggests that Lake Pocotopaug receives between 907 and 1041 lb/yr (older estimates range from 616 to 1890 lb/yr)
- Consistent with empirical model approach (slightly higher in most cases, as expected)

ENR

Loading to Lake Pocotopaug

Breakdown among sources:

- Watershed: 577 lb/yr recently (791 older info)
- Direct Atmos: 164 lb/yr (454 lb/yr older info)
- Waterfowl/Wildlife: 43 lb/yr
- Internal Load: 0 – 35 lb/yr
- Ground Water: 0 – 26 lb/yr

Suggests total of 784 – 1349 lb/yr; reasonable range
What we believe, based on available data and BPJ:
Watershed @ 750 lb/yr, other sources @ 250 lb/yr

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Tolerable Loading

- Goal setting is important: Assume 0.01 mg/L in-lake target, which yields average SITT = 10 ft.
- Empirical models yield acceptable load estimate of 455 lb/yr to achieve above goals
- Load from a completely forested watershed would be expected to be at least 119 lb/yr, maybe 238 lb/yr
- “Uncontrollable sources” = 207 lb/yr
- Leaves no more than 129 lb/yr to come from additional sources

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Conclusion on Loading

- Current load to the lake is around 1000 lb/yr, with substantial potential variability and possible underestimation from recent development
- Desirable load is <500 lb/yr
- Need to roughly halve the current load to the lake
- Some sources are largely uncontrollable; reduction will have to come mainly from the watershed
- Cutting the watershed load by 65% is desired but is about the maximum possible

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Three Approaches to Watershed Management

- Source and Activity Controls - Eliminate or reduce sources which generate pollutants
- Transport Reduction - Capture and remove or convert pollutants before they enter target resource
- Ecosystem Management - Minimize impacts of inputs or repair damage to resources when controls fail

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