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Preliminary Evaluation of Alternatives for Nutrient and Aluminum Removal for the Town of Uxbridge

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Presentation Topics

- Background
- Existing facility
- New permit
- Current Evaluation
- Facility Upgrade
- Probable Costs
- Funding and Recommendations
- Schedule



Wastewater Treatment – how does it work?

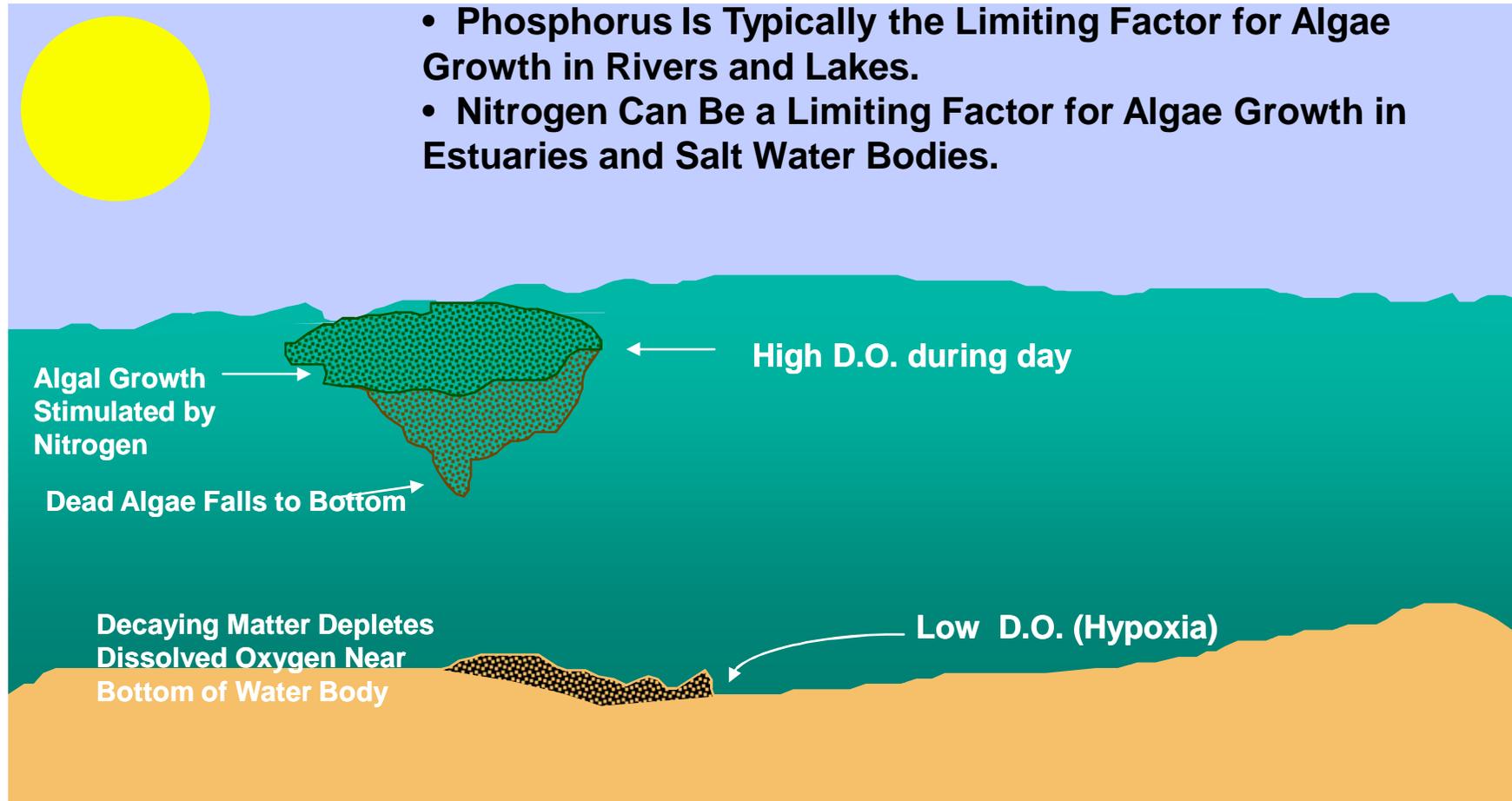


What happens to treated water?

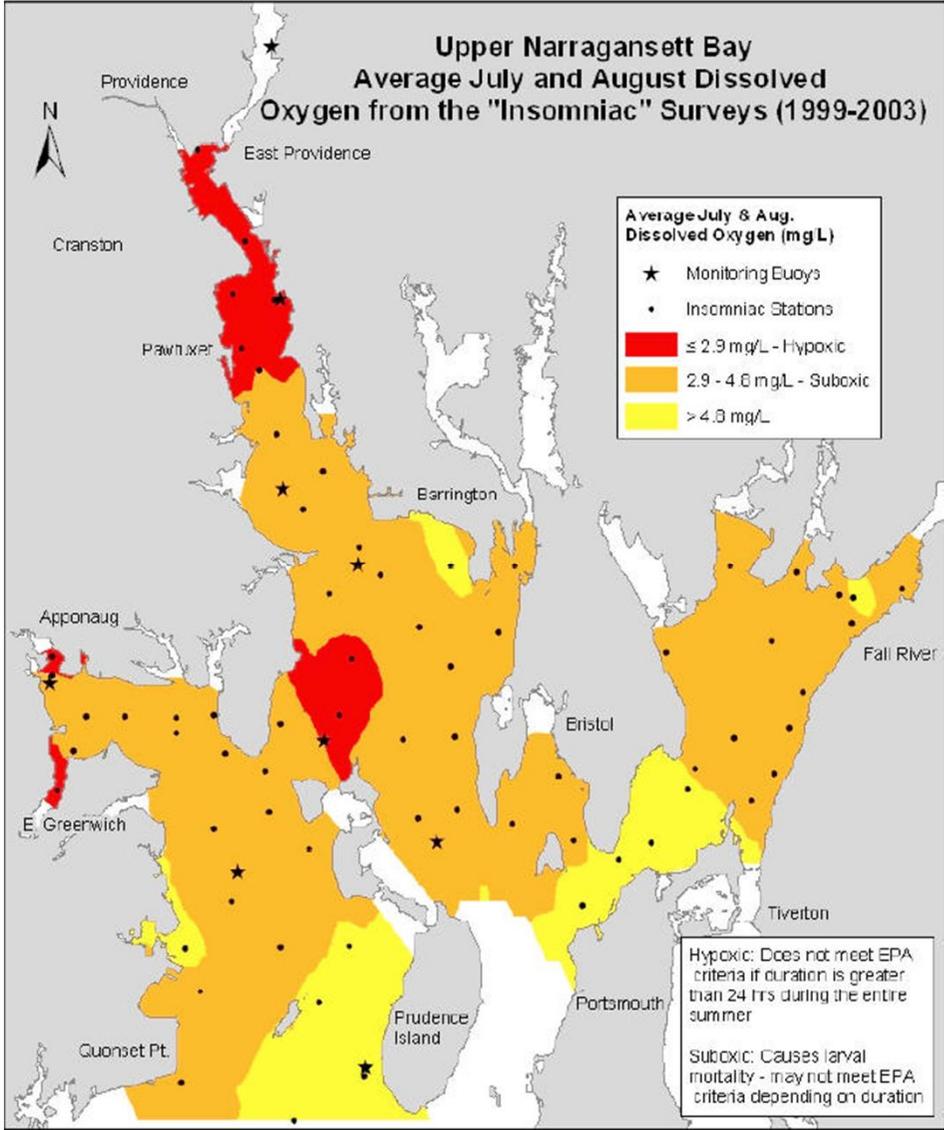
- Treated effluent is discharged to the Blackstone River (receiving water is Narragansett Bay)
- EPA grants a permit which allows this discharge, but only under certain conditions:
 - Quantity is restricted
 - Quality is restricted
- All permits have expiration dates and can result in fines for non-compliance
- Treatment levels (quality) increase as dictated by environmental impacts



Environmental Impacts - nutrients



Background



Existing Facility

- Existing wastewater facilities
 - Collection system
 - Pump Stations
 - Wastewater treatment facility
- Permit compliance – exceptional
- Plant staff implemented cost savings measures that have also led to better performance



Existing Facility

- Use of main infrastructure commenced in 1979 (32 years)
- Life expectancy
 - Concrete tanks, masonry buildings: 50-100 years
 - Mechanical equipment (treatment, HVAC, electrical): 20 years
 - Spare parts
 - Efficiency
 - Standards



New permit

- Current permit was issued September 30, 1999
 - (Expired five yrs later, but new permit has not been issued)
- USEPA has provided notice of a new permit
 - Adds a nitrogen removal requirement
 - Lowers the phosphorus limit
 - Adds an aluminum limit (tied to phosphorus removal chemical)
- Existing facility was not designed to meet some portions of its existing permit at its design flow, and will be unable to meet these new limits



Current Evaluation

- Preliminary Evaluation Goals
 - Goal was to determine approximate costs (capital, O&M)
 - Identify funding sources
 - Provide recommendations
- Preliminary Evaluation Findings
 - Well maintained facility
 - Mechanically, it is very old
 - Much of it does not meet current design standards and codes
 - In need of an upgrade to meet future permit and to reliably continue to operate and meet its current permit



Facility Upgrade



MAJOR WORK

- Preliminary Treatment – new screen, compactor and enclosure/building
- BioMag Process and building to house equipment
- Aeration tank and system upgrade



Facility Upgrade

MAJOR WORK

- Secondary Clarifier equipment and related pump replacement
- Sludge tank replacement and gravity thickener equipment replacement
- Distribution box replacement
- Associated electrical and instrumentation, plumbing, HVAC, etc.



Probable Costs

Probable total project costs (capital; contingency; and legal, fiscal, engineering)

- \$30 million for upgrades related to the whole facility

Operation and maintenance costs

- Additional chemicals, sludge, solid waste and personnel
- Increase of 50% to \$750,000 for the first year budget



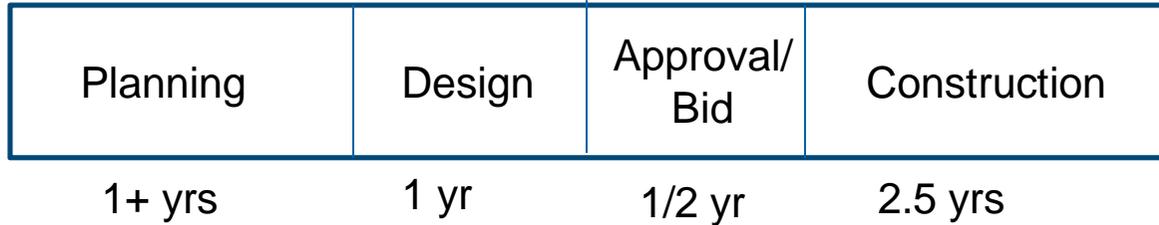
Funding and Recommendations

- Primary funding source: State Revolving Fund Loans
 - Standard 2% loans
 - New Nitrogen-removal related 0% loans
- Recommendation: Commence work on either a wastewater facilities plan or a comprehensive wastewater management plan as soon as practical. This will put the Town in the best position to allow for a methodical, proactive approach to its wastewater needs.

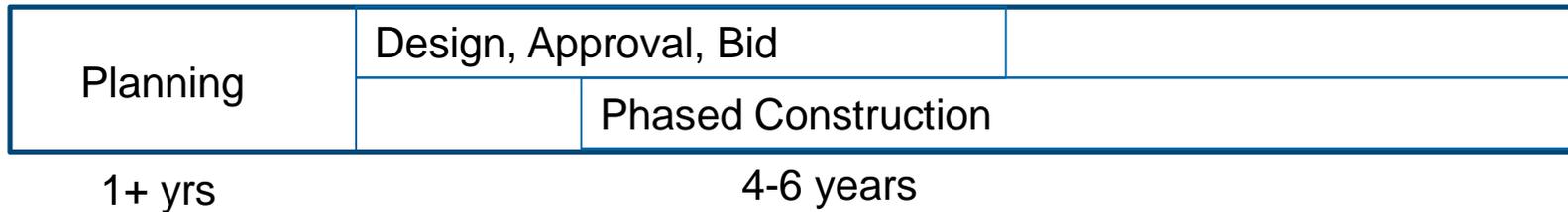


Schedule Options

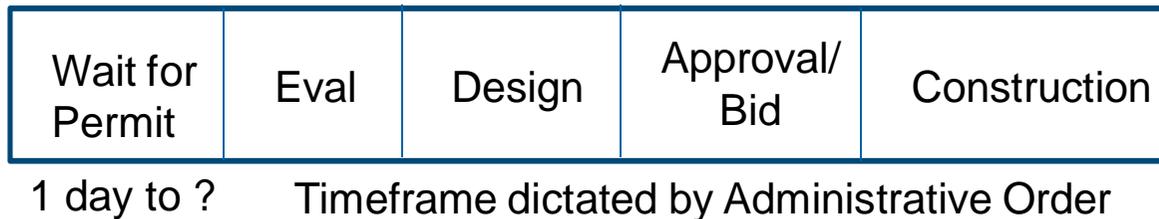
Traditional



Phased



Administrative Order



Questions?

