

WATER FOR RHODE ISLAND - TODAY AND TOMORROW

Thursday, March 1, 2007, 5 - 9 p.m.

Save the Bay Center, Fields Point, Providence Rhode Island

MEETING NOTES

Facilitator's Overview

by Peter August

Today's Workshop is about water and change. Much discussion will revolve around water availability. You will hear how availability changes in time and in space.

- Space: We will focus on how the amount of water available for withdrawal changes in different parts of the RI landscape. Water in RI is not a uniformly distributed. Issues in one neighborhood, community, or region may or not be relevant anywhere else in the state.
- Time: We will talk about how the abundance of water changes within an annual cycle, and among years.

More discussion will focus on water demand

- We will hear about the different demands on our water supplies. These will include:
 - Public safety for fire fighting
 - To maintain adequate flow to rivers and streams so our wetland ecosystems function properly
 - To maintain adequate ground water levels to we maintain hydro-periods that sustain critical habitats such as vernal ponds
 - Adequate flow into our estuaries to maintain the critical zone of habitat that is not completely salty and not completely fresh
 - To provide for the needs of our
 - Agricultural communities
 - Residential communities
 - Industry and business
 - Recreational users such as fishermen, swimmers, paddlers
- How do these demands for our water change in time
 - one season to another
 - from year to year
 - now to the future
- How do these demands change in space, from one part of RI to another

We are here because our demand for water and our supplies of water are out of kilter in some parts of the state and in some periods of time. We are out of kilter when demand exceeds supplies. The challenge to water managers, policy makers, and suppliers is to tweak supply and tweak demand to meet our needs.

The first step is for all the players -- us -- to get on the same page regarding the facts. That is what we are doing tonight. We have the first string team for speakers. The next step is to initiate a dialogue to discuss and debate how the supply side and the demand side of the equation can be adjusted to meet our needs.

What tonight is **NOT**

Tonight is **not** the forum to debate what are the most important uses of water when it is limited -- agriculture, industry, lawns, or ecosystems. That is another forum at another time.

Keynote Presentation

"Securing Our Water Future: A Call to Action" by Amy Vickers

"A Seven-Point Call to Action," excerpts from Amy Vickers' keynote:

1. Shine the Spotlight on Water Waste and Abuse in Rhode Island (e.g., high system leakage and losses over 15%, once-through cooling, and excessive lawn watering).
2. Establish and Enforce Statewide Benchmarks for Water Efficiency (e.g., system leaks and losses, industrial and commercial water use, lawn and landscape watering).
3. Enact *Comprehensive Statewide Water Conservation Legislation* to Establish 21st Century Water Saving Standards, Goals and Deadlines.
4. Drop the Desalination Delusion.
5. Establish Mandatory Statewide Lawn And Landscape Watering Restrictions, Allowing Watering for a Maximum of Once or Twice Per Week Only.
6. Create Economic Incentives for Conservation (e.g., inclining rates, rates, surcharges, rebates, loans and grants).
7. Citizen Groups: Put the Power of Water Conservation in Your Hands!

Notes from the Keynote Presentation, prepared by Greg Gerritt

Capital costs to add 1 million gallons of day of supply can be up to \$22 million

Compared to this conservation is very cheap. It is very doable and the costs are dispersed rather than large capital costs.

Demand is still increasing, and outdoor water use such as lawn watering is the fastest growing category and a major burden. Dealing with lawn watering is a major challenge to conservation of water.

It is relatively easy to get per capita use to 45 gallons a day with low flush toilets, efficient faucets, as long as outdoor use is limited. We can tie goals to what is available, tie goals to reducing by X% say 20%. 20% is a relatively easy reduction. Cheyenne, Wyoming achieved a 47% reduction in per capita use. Some states are starting to look at limiting water use and reducing per capita consumption, especially states in drier parts of the country.

Irrigation for agriculture is a big issue. One issue is can we limit watering by people with private

wells. Because private wells draw on the same water as public wells, from the same water table as reservoirs, if you do not place limits on watering from private wells when you limit others from watering, it not only breeds resentment, it does not prevent lowering of water table.

One thing to do is limit automatic lawn watering systems. Automatic systems water even when it is raining and waste thousands of gallons that are not needed by the plants. Then the runoff is also polluted by lawn chemicals. Dallas had an example of one mansion using 30,000 gallons a day to water its lawns.

Desalinization only seems to make sense when there is no other water, such as desert coasts. It is expensive, energy intensive, and polluting. Only failed systems do desalinization.

Mandatory water restrictions are needed. It has been done municipally but no one has done this statewide yet. It is not popular, but few people understand how critical the situation is. We do municipal watering restrictions in RI, but often with alternate day systems, and those actually mean more water is used/wasted. But actual restrictions could mean huge savings in water used. We also need the right economic incentives, though for wealthy folks those mean little. With water rates relatively low, and pricing based on same price no matter how much is used or the circumstances, we do not give pricing signals for conservation. A system of higher rates in dry weather or higher rates the more you use, could be useful, though often the savings are short lived and the biggest users ignore the pricing signals. So you have to actually limit use as well as use pricing signals.

Education is also important. Talk to community groups, teach irrigation free landscaping, get rid of pesticides and chemical fertilizers that end up in water bodies and harm ecosystems.

There is an issue that water departments get their budgets from selling water, can lose money if conservation works. So you have to adjust prices as use goes down.

Reclaimed water is a mixed bag. With efficient systems and conservation, not much water is wasted, and the water that could be reclaimed could also be used by the ecosystem instead of for human needs, Instituting reclamation systems also is often accompanied by rising water use. The health issues involved have also not been studied well. Reclaiming water may be good on a large site, but not system wide.

HIGHLIGHTS OF PANEL 1: THE EASY YEARS ARE OVER (NOTES TAKEN BY SHEILA BRUSH)

Juan Mariscal, P.E., General Manager, Rhode Island Water Resources Board
(See slide presentation for additional information)

Presentation

Reviewed the various plans developed around water since the late 1950s.

1960s: Planning was based on water suppliers' perspective.

Reservoirs were viewed as the solution to problems.

Groundwater was suspect - this was before the Clean Water Act.

After 1962 defeat, bond issue for Big River passed in 1964.

1989: USEPA prohibited Big Water Reservoir saying it would have negative environmental impacts; said RI did not need reservoir

Recommended for RI:

- Water Use/Capacity Projections
- Demand Management Program
- Groundwater development
- Don't abandon existing supplies

1990s: State produced a number of planning and policy documents

1990 Arthur D. Little Report

1991 State Water Supply Policies Plan

1992 Legislature required water supply systems to do supply management plans and to look at conservation, pricing

1997 Responsibility for overseeing supply management plans transferred from DEM to Water Resources Board

Rhode Island Water Resources Board does have authority to manage water allocation. Created Water Allocation Program Advisory Committee, a large, interdisciplinary group that conducted a two-year study and produced 6 main action steps.

Currently, the RI Water Resources Board is working with 3 water suppliers to address summertime usage peaks in Hunt River.

Priorities for RI Water Resources Board include:

- Funding and staffing resources to address water protection, use, management, Conservation
- Develop Water Management System
- Big River Management Area - plan for groundwater withdrawal, study impacts
- Reduce outdoor summer use
- Reduce excessive residential use
- Water recycling
- Consolidate Water Systems
- Water education Program

Alisa Richardson, P.E., Principal Sanitary Engineer, RI Department of Environmental Management Office of Water Resources
(See slide presentation for additional information)

Presentation

Alisa addressed the issue of groundwater supplies and explained impact of water withdrawal on groundwater supplies, interaction between groundwater and streams, and impact on biology. Also talked about what Rhode Island is doing to develop stream flow standards.

Main problem occurs in summer months when natural evaporation reduces groundwater supply at the same time that demand peaks

Water withdrawal takes water from streams and lowers the groundwater table

Due to impervious surfaces, some water never gets back into the water table.

These issues result in changes in temperature of water, quality of water, habitat availability, and ultimately in fish population

Showed groundwater aquifer locations around state and discussed groundwater areas that are areas of concern

Hunt River Watershed is a particular concern

Three water suppliers draw from this area - Quonset, Town of North Kingstown and Kent County Water Authority

Fish population has changed

RI is studying Connecticut and Massachusetts stream flow measurement models to develop stream flow classifications for Rhode Island.

Also looking at other holistic approaches, including

Rewriting stormwater manual

Conservation

Reviewing permits in watershed context

Alisa also noted that we don't have a lot of information about the impact of reduced stream flow on the Bay - this should be researched

Henry Meyer, Manager of Kingston Water District, President of RI Water Works Association, Chair of South Kingstown Planning Board

Presentation

The real issues are the reliability of our water system infrastructure and the need for personal behavior modification re water consumption.

Water system infrastructure

We take underground water system infrastructure for granted - pipes and fittings need to be inspected.

Kingston has looked carefully at the capital costs to maintain system. They created a fee that would capitalize the costs over 20 years. Of an average Kingston bill of \$300, \$200 is for capital costs.

Kingston also discovered that lawn irrigation demands were outstripping the old meters' ability to measure, and so water use was being under-measured. They have installed new meters - charged customers for doing this.

Water use

Economic viability of the state is dependent on industry, and our farms have to survive so we have to reserve water for those uses.

We need to have a serious discussion about what water use is essential on residential side.

The fundamental issue is that we all use too much. Americans are "spoiled rotten." In many parts of the world, people live on much less water - some on almost no water.

Henry's observation is that water use goes up when town sewer goes in. Average water use before town sewers was 45 gallons/capita/day. When town sewers went in it rose to 75 gallons/capita/day.

Today, non-industrial use in Kingston is at 62 gal/capita/day.

Need to look at relationship between municipal planning/zoning and water use.

Kenneth Payne, Director, Rhode Island Senate Policy Office
(See slide presentation for additional information)

Presentation

Ken talked about how we insure future sustainability. He noted that the Senate and the House are structuring their hearings around this.

Covered three subjects:

1. Conditions - Supply, Demand, Cost
2. Organizational structure
3. Need for Cooperation and Action

1. Conditions

Supply

60% of the state's population relies on Scituate Reservoir (via Providence Water Supply Board) for water

We keep adding more users

When users came on line with Providence Water Supply Board, they sometimes abandoned local supply sources

Demand

In 1950, we had 43 million gallons of reserve capacity in the Scituate Reservoir

Today, the average demand in July from the Scituate Reservoir has exceeded the safe daily yield

Cost

We are facing huge costs for Scituate Reservoir system infrastructure maintenance -- \$800 million investment is needed

Infrastructure lasts about 70 years, and Scituate Reservoir system went in in 1926 - so we are living on borrowed time.

2. Governmental structure for overseeing water

Responsibility is divided amongst 4 entities:

Safety	Department of Health
Ecology	Department of Environmental Management
Reliability	Water Resources Board
Cost	Public Utilities Commission

Is there some other overarching interest that trumps safety, ecology, reliability, cost?

We haven't identified one, so we probably need to establish a structure that networks the 4 entities

Network goal should be to produce positive outcomes, not merely for the various entities to be vetoing requests/projects

In order to manage the interconnected responsibilities, the network would need to have a plan that covers mission, goals and values

3. Need for cooperation/action

Everyone has assumed that the Providence system will go on forever supplying whoever needs it - this is not the case.

We'll have to make real choices, based on managing demand

Back-up supplies are our insurance system

The Senate, House and Governor all agree that we have to get on with this work.

HIGHLIGHTS OF PANEL 2: MEETING THE CHALLENGE

Notes taken by Greg Gerritt

Anne Veeger, Ph.D., Department Chair, GeoSciences, University of Rhode Island
(See slide presentation for additional information)

Presentation

Recognizing the problem is one thing, meeting the challenge is something else entirely.

For much of the public, the most concrete evidence that the easy years are over comes in the form of nearly annual water-use restrictions in some RI communities. The absence of restrictions in some communities and imposition of austere restrictions in others leaves many wondering what the real story is. It is therefore no wonder that the public is often confused about where we stand.

Many people think that a water shortage isn't their problem. It's easy to drive past a turf field with a giant sprinklers and feel secure in the false impression that "they" are responsible for excessive withdrawals. Examination of water-use patterns however, has clearly shown that agricultural use is a small, albeit visible fraction, of total water use in RI. Annual state-wide public supply domestic use is 30 times agricultural irrigation at 64 mgd versus 2.3 mgd.

There is also a profound lack of understanding about the nature of the State's water resources. Increasing numbers of suburban homes on public supply are drilling wells for lawn irrigation. This isn't done as a cost saving measure, but to circumvent local outdoor water-use bans. The logic

behind this approach indicates that the homeowner either thinks that water from a well on their property comes from a separate "water bank" and doesn't count against total water withdrawal, or they consider water shortages to be someone else's problem to solve.

Conservation measures are most effectively targeted at the biggest users, to effect real savings we need to reduce unnecessary domestic use, particularly outdoor/lawn use by houses and businesses.

How do we meet the challenge? Good data, Good policies and procedures, Educate the public
We must meet the long term goal of balancing the hydrological budget to ensure sustainability.
This is not an easy task.

1) How much water is available? 2) what is the total demand, not only this year, but in the years to come? Without this information in place, effective management is impossible and the other recommendations can't be effectively implemented.

Sustainability is not easy to define. Currently, what is acceptable socially is often damaging ecologically .

We also have to define an acceptable level of risk. What time interval should we use for safe yield? 1 in 4 years, 1 in 10 years, or 1 in 100 years as is done for surface water reservoir safe yield calculations.

In 1999, the Water Resources Board (WRB) convened the Water Allocation Program Advisory Committee (WAPAC) with a large group of stakeholders, 10 subcommittees, and feedback from all sectors. The committee made many recommendations (see <http://www.wrb.state.ri.us/wapac.htm>), a subset of which were accepted by the WRB in 2004 for implementation:

- 1) Adopt a priority water use policy
- 2) Create a water management system using a watershed approach
- 3) Expand the water use data reporting system
- 4) Establish a water allocation program implementation team
- 5) Establish a separate WRB/DEM/USGS Partnership to be known as the Streamflow working group
- 6) Develop an Education and Outreach Program

The WRB is now trying to implement these recommendations.

Perhaps the most critical from a hydrologic perspective is the need to expand the water-use data reporting system.

Major supplier reporting on monthly withdrawals is being implemented. This will allow us to clearly understand total demand, seasonality and how use varies by community/watershed. Quarterly reporting of use by category, when implemented, will show total demand and seasonal variations in use by different user groups (industrial, commercial, agriculture, residential).

These major suppliers provide 88% of the water used in RI.

Smaller suppliers will be asked to do voluntary reporting. Although representing only 12% of water use state-wide, in some watersheds small systems and large self-supplied users make up the bulk of withdrawals. We need to know what is going on in those systems as well.

We need to expand stream gauge monitoring so we can track natural fluctuations and note stresses. This flow data is a critical indicator of watershed "health."

Information on water use and stream monitoring, done on a watershed basis, tell us a lot about the balance of between use and availability.

Finally, additional data gathering must continue - looking at state -wide planning, build out analysis, and population data, it is clear we need to prepare for population shifts, and shifts in water usage. With out-migration to the suburbs, big lawns in South County are stressing water systems there, and economic development in other parts of the state is also shifting the demand location.

The WAPAC recommendations adopted by the WRB have paved the way, but the truly challenging work lies ahead. Disparate views on sustainable development, acceptable environmental impact, the need for regulations, the uncertainty of managing a resource that varies from year to year, and the political and economics ramifications of these decisions makes reaching consensus and moving to implementation a particularly challenging task. The time to effect change however, is before we reach a water crisis. Decisions made in a crisis situation will out of necessity focus on short-term solutions at the expense of long-term sustainability goals.

To avoid a crisis we need good data, to keep sustainability in mind, and a collaborative effort.

Kevin Flynn, Director, RI Department of Administration Division of Planning
(See slide presentation for additional information)

Presentation

The Department of Administration Statewide Planning Program is focused on Land Use 2025 - Urban/rural issues. Growth is now in suburbs, exurbs, but it might be better to concentrate it where services exist, urban areas, central villages. Places with transit, public water and sewer.

We need to protect watersheds to protect the water supply. We need to discourage low density sprawl. Protect open space and farms. With growth in groundwater dependent areas of state water tables are a concern, and dropping water tables means less water in streams and rivers.

We have low population growth in RI, but lots of population shifting.

In 330 years RI developed 20% of its land. In the last 30 years an additional 10% has been developed. We could run out of land to farm, for woods, for water supplies recharge.

Sustainable village development is a tool for us. Revitalize village centers, help folks be less auto dependent. We need good laws, zoning codes, comp plans, incentives. We need to protect green space and water supplies, practice smart growth and think about community design.

Note that the State Planning Council ruled against the Quonset Gateway today. If we can not practice what we preach on state land, how can we expect anyone else to follow the guidelines? Rejection of Gateway plan is a big step to practicing what we preach.

We need to build where there is already proper infrastructure. Water, transit, energy are all issues we need to develop. Get good Science into local and state codes.

It will be challenging to direct population into growth centers rather than allowing it to sprawl. 2 to 5 acre zoning is the worst. Not really rural, but too little density for good systems.

Cost of living in RI is high, except for water. Cheap water does not encourage conservation - neither in codes, nor in personal behavior nor in maintenance budgets.

Maybe we need to go to increasing block rates, seasonal adjustments? Jamestown has severe water problems as an island with limited water underground. They have banned outside watering, forced houses to retrofit toilets. Rest of state is not in quite such dire straits, but we need to start the process now. There are no quick fixes. Prioritize water use? Recycle water? Change pricing structure? Golf courses are starting to lead in recycling water, keeping greens green with gray water. RI has seen businesses not locate here or relocate due to water issues. Would it make sense to move Amgen to a place in the state with better water supply?

We have done lots of planning activities, now we need to actually make it all work.

Sue Licardi, Director, North Kingstown Water Department
(See slide presentation for additional information)

Presentation

North Kingstown has 9250 hookups and lots of self supply wells. The goal of North Kingstown Water Department is to manage a municipal system, with a focus on quality and distribution while protecting the water sources. North Kingstown also has to deal with regulatory issues and huge fluctuations in seasonal water demands.

Important concepts to remember include: Data collected and shared, Daily averages, Peak demand, and maximum capacity.

January to April use less than 4 million gallons per day; May and June water use is weather dependent, but rising. July and August are biggest demands for water and the water tables are lowest. During 2005, the system maxxed out. 2006 was a wet year and there were no problems. During "wet" years folks use less, and there is more water. Even in wet years like 2006 water demand jumps in the summer compared to other seasons. In August the demand for water often exceeds the maximum capacity of the system. September water demand starts to recede, and Oct to Jan demand is back down.

New subdivisions use more water than older subdivisions. larger lots and automatic sprinklers.

Automatic sprinkler systems run even in the rain. The summer peak is still too high. This can create health and safety issues, concerns about fire pressure. Contamination is easier if water pressure is low.

North Kingstown draws water from 3 different aquifers - Pettasquamscut, Hunt, and Annaquatucket.

Within the basin 3 major water systems (Kent County Water Authority, Town of North Kingstown Water Department, and Quonset Development Corporation withdraw large amounts of water to meet public demand. There needs to be much more coordination. These 3 water systems

collaborated/cooperated on well head protection in the 1990's but not on very much since. Stream flows were ignored in the 1990's but can not be ignored now.

What to do? Water rates? Consistent message on restrictions in use. Land use regulations
Limit lawn watering? irrigation? Get a handle on private users, especially in the Hunt watershed.

North Kingstown sends out the "Puddle" with every water bill. We conduct demonstration projects on healthy landscapes in conjunction with URI. Rain gardens, runoff management. Water department website has conservation information, they do exhibits at environmental and town events.

Need to: reduce seasonal water demand, provide a consistent message, maintain revenue stream even as water use drops and protect the water supply.

Cynthia Giles, Executive Director, Conservation Law Foundation of RI, speaking for the Coalition for Water Security
(See slide presentation for additional information)

Presentation

I am speaking from the perspective of Coalition for Water Security - a coalition with many partners representing many different interest groups, environmental and business.
Key problem is that highest demand for water is when flows are lowest (summer).

This can dramatically affect the ecological health of streams.

Indoor use does not vary all that much seasonally, it is outdoor use in the summer that over stresses the water system
30% of all water used in RI in the summer is for outdoor use. Nationally the same thing is seen, nearly 1/3 of all water use is for watering lawns. In Warwick water use in summer is triple winter use. And systems have to be sized for the peak demand.

Coalition paper is available: Protect natural resources, Set Stream flow standards,
Develop a statewide system to manage withdrawals with real teeth, and require conservation to meet the needs of the streams and ecosystem

Actually develop ways to enforce reduced outdoor water use in summer. Conservation pricing?
Revenue streams must be maintained for water suppliers. Protect land for water supplies permanently

Program - Natural resource protection, Limit/manage withdrawals, Institute conservation pricing, and Protect land