Balancing Housing and Clean Water

Scott Millar & Lorraine Joubert
Rhode Islanders want clean water AND affordable housing

Clean Water and Open Space Bonds consistently receive the highest voter approval rates at 80% or more.

Approval rates for affordable housing are close behind.
RI needs to balance housing and clean water

• Water quality is directly linked to land use
• Increase in density = decrease in water quality
• Polluted waters are very expensive to restore; prevention is critical
• State regulations alone are inadequate to protect water quality; municipal land use is needed
• Smart growth can balance housing and water quality
Impervious surfaces prevent rainwater from naturally draining into the soil
Untreated polluted runoff is directed into drains and pipes that empty into our water bodies.
Relationship between Impervious Cover and Water Quality
Impervious cover

USB: 27% impervious

Non-USB: 5% impervious

RIGIS 2020, Paul Jordan, RIDEM
Water quality impacts are now a problem statewide.
RI’s tourism industry supports nearly 38,000 jobs and brings in more than $5B annually.

Beach closures due to high bacteria have far reaching economic impacts.
Excess nutrients in freshwater cause algal blooms that make water unsafe for recreation and complicate water supply treatment.
Example local water quality problems and actions

Small substandard lots $\leq 5,000$ sf are often concentrated in coastal or lake areas and village centers
South Shore Communities

• URI Coastal Pond research and CRMC regulations determined zoning density based on science.

• Towns adopted recommendations for lot size and OWTS setbacks from shorelines.

• Towns spearheaded use of advanced treatment systems, onsite wastewater management programs and community septic system loans with DEM.

Source: Town of Charlestown
High water table ordinance in Jamestown adopted to protect private well water quality

Additional study years later showed further decline in groundwater quality, most likely due to increased density and effluent from advanced OWTS is 19 mg/l.
Lack of groundwater supply in **West Greenwich** led to updated well installation regulations.

Additional testing for well water quantity and safe yield is required, beyond minimum state requirements.

Wells drilled in bedrock may have limited supply.

Source: URI HomeASyst
Charlestown eliminated cesspools!

However, 20 years after adoption of a wwmgt program, groundwater monitoring continues to show increasing nitrogen despite use of advanced treatment systems with new development and repairs.
RI Land Use Plan Vision

Encourage growth within the Urban Services Boundary (USB)

Villages buffered by greenspace
Critical drinking water supplies are located almost entirely outside of the USB.
Mapping Potential Sites Suitable for Higher Density Residential Development

Technical Paper # 160

Rhode Island Statewide Planning Program, March 2008
Coventry
## Impervious cover associated with residential lot sizes

<table>
<thead>
<tr>
<th>Lot size</th>
<th>Dwelling units/acre</th>
<th>% Impervious cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 acres</td>
<td>0.1</td>
<td>2.4%</td>
</tr>
<tr>
<td>5 acres</td>
<td>0.2</td>
<td>5%</td>
</tr>
<tr>
<td>3 acres</td>
<td>0.333</td>
<td>8%</td>
</tr>
<tr>
<td>2 acres</td>
<td>0.5</td>
<td>12%</td>
</tr>
<tr>
<td>1 acre</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>.5 acre</td>
<td>2</td>
<td>25%</td>
</tr>
<tr>
<td>.25 acre</td>
<td>4</td>
<td>38%</td>
</tr>
</tbody>
</table>
Scituate Reservoir Watershed

Total watershed: 4% impervious

Eastern watershed: 9% impervious
## Compact growth can reduce impervious cover

<table>
<thead>
<tr>
<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Site: 20% impervious cover&lt;br&gt;Watershed: 20% impervious cover" /></td>
<td><img src="image" alt="Site: 38% impervious cover&lt;br&gt;Watershed: 9.5% impervious cover" /></td>
<td><img src="image" alt="Site: 65% impervious cover&lt;br&gt;Watershed: 8.1% impervious cover" /></td>
</tr>
<tr>
<td>1 unit per acre</td>
<td>4 units per acre</td>
<td>8 units per acre</td>
</tr>
</tbody>
</table>

Protecting Water Resources with Higher-Density Development, US EPA
Techniques to balance housing and water quality

- Conservation Development
- Village Development
- Transfer of Development Rights
Conservation Development

Nine ½ acre lot conservation development and protected open space

Nine 1 acre lot conventional development
Transfer of Development Rights

Owner of “sending” parcel sells development rights in exchange for a permanent conservation easement.

Owner of “receiving” parcel buys development rights to build at densities higher than allowed under base zoning.
Key points

• Housing density needs supporting infrastructure
• The best locations for density are within the USB
• Compact growth can avoid impacts to water quality
• Towns outside of the USB should maintain low density but use compact growth
• The State must provide financial and technical assistance