Passaic Trading Framework

Passaic Trading Symposium
July 15, 2008
USEPA Targeted Watershed Grant Program

Rutgers
The State University of New Jersey

Cornell University
Trading Framework

• What are restrictions on trading necessary to comply with TMDL water quality targets?

• Framework must:
  – Ensure hot spot avoidance
  – Address watershed-specific features
    • Protect both TMDL critical locations (Dundee Lake and Wanaque Reservoir)
    • Perform under all diversion scenarios
  – Minimize transaction costs
  – Maximize cost-effectiveness
Trading Framework

• Identifying potential hot spots: modeling has demonstrated excessive P is only a water quality concern at the two TMDL critical locations.
• Identify dischargers as “Category 1” or “Category 2”

  – Category 1 dischargers are *naturally* upstream of Category 1 waters. May only sell allowances.

  – Category 2 dischargers are *not naturally* upstream of Category 1 waters. May buy or sell allowances.
Trading Framework

- Group WWTPs into “management areas”.
- Management area is bounded by a TMDL critical location
  - Management area is designed to protect TMDL critical location.
  - Within the management area, buyers and sellers can trade bi-directionally. For trades between management areas, buyer and seller must share all common TMDL critical location(s).
- Apply trading ratio
Passaic Trading Framework

Legend
- Management Area boundary
- Critical location
- Tributary
- Periodic Diversion

Wanaque Reservoir

Management Area boundary

Critical location

Tributary

Periodic Diversion

Legend

<table>
<thead>
<tr>
<th>Management area</th>
<th>Category 1 dischargers</th>
<th>Category 2 dischargers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Passaic</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Pompton</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Lower Passaic</td>
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<td>5</td>
</tr>
</tbody>
</table>

Upper Passaic M.A.: 26 dischargers

Pompton M.A.: 21 dischargers

Wanaque South intake critical location

Dundee Lake critical location

Dundee Lake
Passaic Trading Framework: *Three Management Areas Protecting Two critical locations*

<table>
<thead>
<tr>
<th>Seller</th>
<th>Buyer</th>
<th>Upper Passaic MA</th>
<th>Pompton MA</th>
<th>Lower Passaic MA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Passaic MA</td>
<td>Yes</td>
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</tr>
<tr>
<td>Pompton MA</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lower Passaic MA</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Passaic Trading Table

• How was the trading table developed?
  – Analyzed 3 scenarios: No Diversion, Diversion, Extreme Diversion
  – Selected most conservative options from each scenario to create the final table
  – Trading table is protective of water quality under all scenarios
### Passaic Trading Table: No Diversion Scenario

<table>
<thead>
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</tbody>
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- **Wanaque Reservoir**
- **Pompton M.A.**
- **Upper Passaic M.A.**
- **Lower Passaic M.A.**
- **Dundee Lake**
  - Dundee Lake critical location
## Passaic Trading Table: Diversion Scenario

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<td>Yes</td>
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</table>

- **Wanaque Reservoir**
- **Pompton MA**
- **Upper Passaic MA**
- **Lower Passaic MA**
- **Wanaque South intake** critical location
- **Dundee Lake**
- **Dundee Lake critical location**
Passaic Trading Table: Extreme Diversion Scenario

<table>
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Wanaque Reservoir

Upper Passaic M.A.

Pompton M.A.

Wanaque South intake critical location

Dundee Lake critical location

Dundee Lake
Passaic Trading Framework: *Three Management Areas Protecting Two Critical locations*

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