Acknowledgements

- The OCWA Board
- Orange County DPW
- The Towns of Newburgh, New Windsor, and the City of Newburgh
- NYCDEP
- NYSDOS- funded study thru LGE grant
Recent Developments Since 2011

- Orange County was awarded a NYSDOS LGE Implementation Grant (Spring 2012)
- The Town of New Windsor has begun Groundwater Investigations at Plum Point
- Town of Newburgh has advanced construction of its Delaware Aq. Shaft 5A 6 MGD WTP (Spr. 2013)
- An Implementation Plan following the 2010 feasibility study recommendations of establishing interconnections with the City of Newburgh and the Towns of Newburgh and New Windsor was started in July 2012.
General Background - Orange County, N.Y.

- Population as of 2008: 360,496 people - about 80,000 people in NE OC
- Located 40 miles north of NYC in the mid-Hudson River Valley Region
- 42 municipalities: 3 cities, 20 towns, and 19 villages
Orange County Water Resources

- County Water Supply Capacity: 67.4 mgd
- Surface Water: 32.9%; Groundwater 55.9%; NYC Aqueducts: 11.2%
- 75% Public; 25% Private
- 160 Community Systems
- 12 Public Systems use reservoirs
Current Water Supply Conditions in Northeast Orange County

- **Town of Newburgh (5.9/8.1 MGD capacity)**: Delaware Aqueduct Shaft 5A (3.8 MGD, will be expanded to 6.0 MGD with new plant- Spr. 2013); Chadwick Lake (2.1 MGD-safe yield)
- **Town of New Windsor (3.5 MGD)**: Catskill Aqueduct @Stewart Airport (0.5 MGD)& @ Riley Road (3.0 MGD)(Silver Stream Reservoir-Emergency)
- **City of Newburgh (9.5 MGD)**: Lake Washington+ Silver Stream Reservoir (3.7 MGD), Catskill Aqueduct (4.5 MGD)
- **Lake Washington**: 1.5 BG capacity, 29.5 ft. deep (not including lower basin- Lockwood Basin Reservoir- 36 MG capacity
- **Patton Brook Diversion**: diverted via a 0.5 mile 5ft conduit to Lake Washington
- **Silver Stream Reservoir**: 750 MG capacity, 16.5 ft. deep; diverted via open stream or pipeline\P.
- **Catskill Aqueduct Tap**: at Silver Stream Reservoir: P.S. & 16” line already exist w/\ 4.5MGD capacity (NYC allotment)
- **Dr. Russell B. Scobie Water Filtration Plant**: 9.5 MGD capacity w/room for expansion
- Total drainage area of catchments equals 6.74 sq. mi.
NE OC Water Supply Project: Key Questions

- Will there be enough water during NYC Aqueduct shutdowns - either Catskill or Delaware or both simultaneously?
- Is groundwater a viable source of supplemental supply?
- How can the three municipalities best share the existing regional water supply? What excess capacity exists?
- How can the optimal plan be financed and what types of inter-municipal agreements need to be put in place?
- What will the water cost?
Project Objectives

1. **Provide for Interconnections** between the City of Newburgh and the Towns of Newburgh & New Windsor that will allow for the three systems to operate relatively independent of the NYC Water Supply system

2. **Provide for water supply capacity** to address times when the NYC aqueduct supply is unavailable (both Catskill and Delaware

3. **Provide for improved reliability** among all three municipal supplies

4. Provide additional water supply capacity to **address future growth** within the Northeast Orange County area
Two Key Project Components

Interconnections

Supply Augmentation
Supply Augmentation

- City of Newburgh excess supply under “non-1960’s drought” hydrologic conditions
- Expand City of Newburgh System- Drury Creek
- Optimize supply via interconnections, i.e., Chadwick Lake & an expanded Delaware Aqueduct withdrawal
- Groundwater- Plum Point, other New Windsor & Newburgh wells
In 2010 the average daily volume of water delivered to the City was 3.6 MG.

A recent safe yield study (2012) of the system determined the City could reliably supply 3.73 MGD (1960’s drought).

During non-1960’s drought conditions the system could supply 5.5 MGD (w/o GW) & 8.5 MGD (w/ GW) – an excess between 1.9 and 4.9 MGD (use 3.0 MGD).
Strategic Tri-Municipal Interconnections

1. **Interconnection 1:** between City of Newburgh and Town of New Windsor at Rt.32

2. **Interconnection 2:** two major interconnections between the City of Newburgh WTP and the two Towns

3. **Interconnection 3:** between the Town of New Windsor & the Town of Newburgh near Stewart Airport
## Operating Scenarios: Will there be enough water to spread around?

<table>
<thead>
<tr>
<th>Operating Scenario</th>
<th>New Windsor (MGD)</th>
<th>Newburgh (T) (MGD)</th>
<th>City of Newburgh (MGD)</th>
<th>Excess (MGD)</th>
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<tbody>
<tr>
<td></td>
<td>Demand</td>
<td>Supply</td>
<td>Demand</td>
<td>Supply</td>
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<tr>
<td>1. Baseline</td>
<td>3.0</td>
<td>4.3</td>
<td>3.8</td>
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<tr>
<td>2. Catskill Aqueduct Out</td>
<td>3.0</td>
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<tr>
<td>3. Delaware Aqueduct Out</td>
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<td>3.8</td>
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<tr>
<td>4. Delaware Aqueduct out w/Turbid Catskill Aq.</td>
<td>3.0</td>
<td>0.8</td>
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<tr>
<td>5. Delaware Aqueduct in Service w/Turbid Catskill Aq.</td>
<td>3.0</td>
<td>0.8</td>
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<td>8.1</td>
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</tbody>
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* 2020 demand is assumed to be 14.3 MGD: includes 0.8 MGD for NYCDEP and Marlborough (T) and 4.5 MGD TNB, 5.0 MGD CNB, and 4.0 MGD TNW.
System Hydraulics

In order to design interconnections – need to understand system hydraulics- pump stations size, storage, etc.
Project Execution
A Complex Project- Many Players

Northwest Orange County
Water Supply Implementation Project

Refine Alternatives Analysis from Feasibility Study
- City of Newburgh WTP Interconnection and Expansion
- Assess Groundwater Resources

Develop Facility Plan for Selected Alternative
- Define Project Goals/Determine Cost, Operability and Constructability

Develop Basis of Design Report
- Establish Design Criteria
- Preliminary Drawings
- Define and List Key Scope Elements

NEXT PHASE
Project Design and Construction

City of Newburgh

Town of Newburgh

Town of New Windsor

- Intermunicipal Agreements
- Water Rates
- Financial and Institutional Arrangements
- Financing
- Ownership
Keys to Project Success

- Motivated Municipalities
- Willingness to enter into Inter-municipal Agreements (IMA’s)- Cooperation
- Overcome “Home Rule” mindset
- The existence of viable financing mechanisms
- Coordination at the County Level – need for a “facilitator”
Thank You..... Questions?
Potential Supplemental Groundwater Sources

- Productive freshwater aquifer on the western shore of the Hudson River
- The aquifer is estimated to be of sufficient capacity
- Roseton is a potential well site; will require well development, and could connect to the Town of Newburgh’s water district at River Rd. and Rt. 9W
- The Town of New Windsor is investigating a similar groundwater source at Plum Point Park