

WATER RESOURCES OVERVIEW

Charles County, Maryland



July 27, 2010



Purpose

- An overview of water resources in Charles County
- An update on water strategies & our progress
- A review of future opportunities

Overview

Water Service Area Map



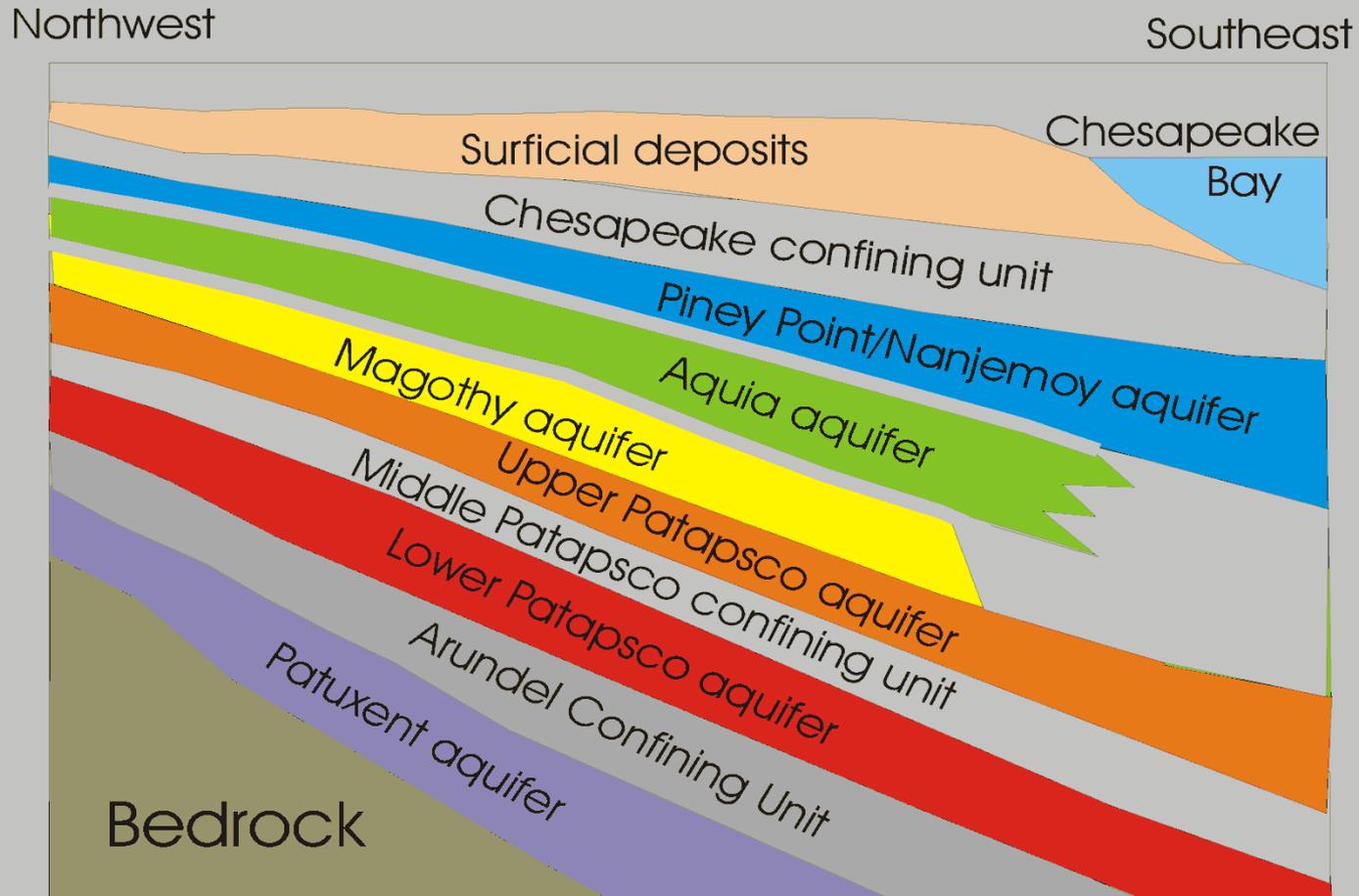
Overview

Potable Water Resources

- Surficial Aquifer
 - Aquia Aquifer
 - Magothy Aquifer
 - Upper Patapsco Aquifer
 - Lower Patapsco Aquifer
 - Patuxent Aquifer
-
- Washington Suburban Sanitary Commission (WSSC)

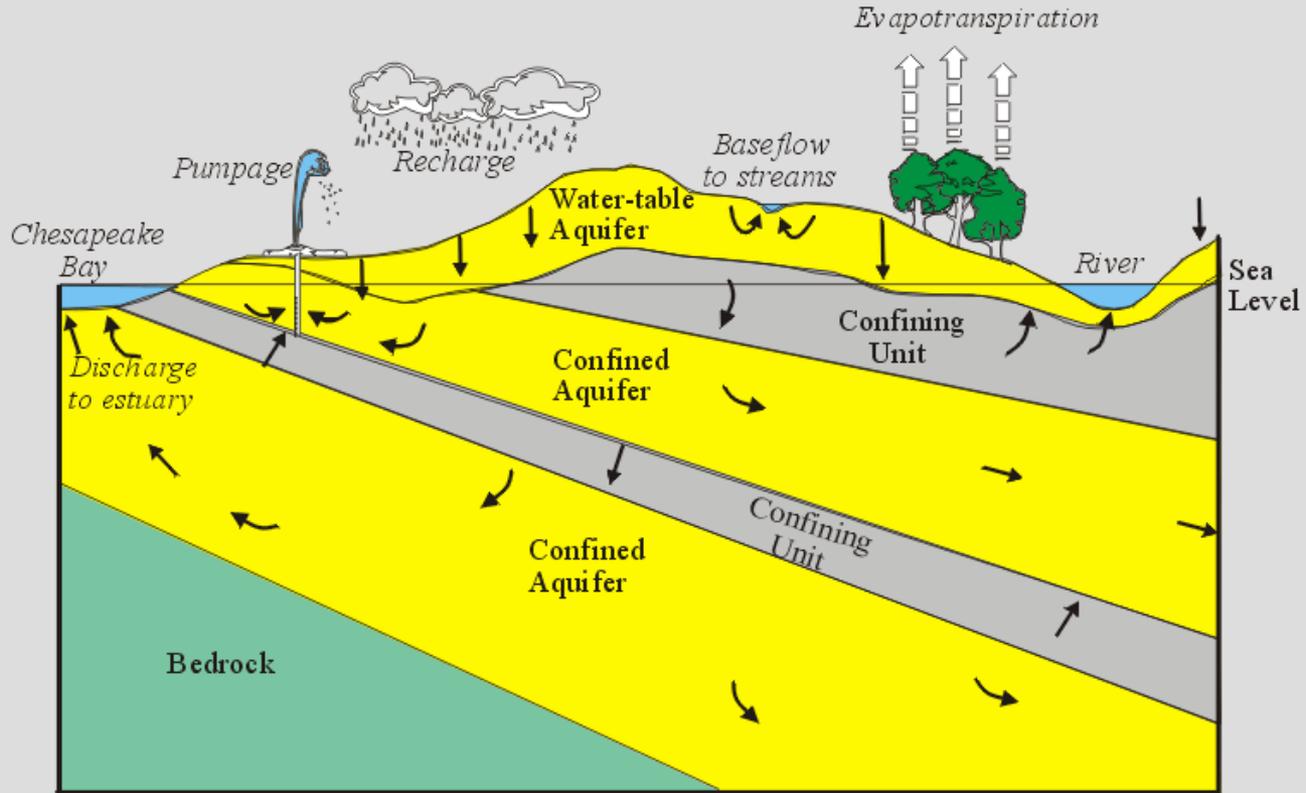
Overview

Southern Maryland Aquifers



Overview

Hydrologic Budget



Overview

Water Resources have been studied in Charles County for over 25 years:

- **Magothy Aquifer Management Strategy - Early 1980's**
- **Charles Co. Water Supply Resources Development & Mgt Plan - 1984**
- **Ground-water use in the Coastal Plain of MD, Charles County, MGS - 1989**
- **Bryans Road Water System Study - 1989**
- **Waldorf Aquifer Study, MGS - 1990**
- **Bryans Road Regional Water Supply Study - U.S. Army Corps - 1993**
- **Bryans Road Water Study - 1996**
- **Charles County Water Supply & Availability Study, 1997**
- **Bryans Road/Indian Head Patapsco/Patuxent Aquifer Study, MGS - 1999**
- **Waldorf Groundwater Optimization Study, MGS - 2003**
- **Bryans Road Groundwater Optimization Study, MGS - 2004**
- **Southern Maryland Regional Aquifer Study, MGS Admin. Rpt. - 2005**
- **Central Development Area W/S Feasibility Study – 2006**
- **Southern Maryland Regional Aquifer Study, MGS Admin. Rpt. - 2005**
- **Waldorf Water System Distribution Study - 2008**

Strategies

Water Resources Advisory Committee - WRAC

- Formed in late 2005
- Members/Participants included:
 - County Staff
 - Concerned citizens
 - Health Department
 - MD Dept. of the Environment
 - Town of La Plata
 - Town of Indian Head
 - Well driller/Water Professional
- Committee made 15 Recommendations to the County Commissioners in November 2006

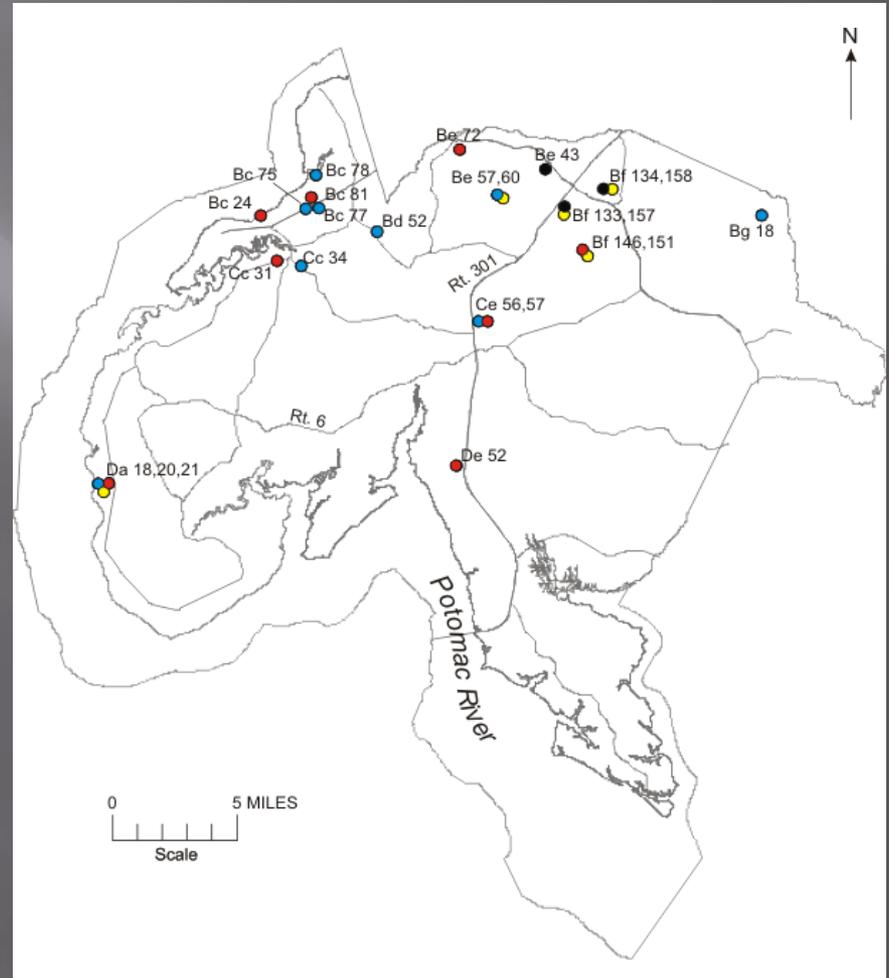
Water Resources Strategies

- ▣ Groundwater Monitoring
- ▣ Minimize drawdown in Magothy & Patapsco aquifers
- ▣ Utilize down-dip area
- ▣ Well Field Management
- ▣ Water Re-Use/Closed Loop
- ▣ Supplement our water system with alternatives to groundwater
- ▣ Water conservation program

Strategies

GROUNDWATER MONITORING

- Regular measurements to observe water levels
- Gather Data
- Establish trends
- Adjust pumping as needed
- Plan for future needs

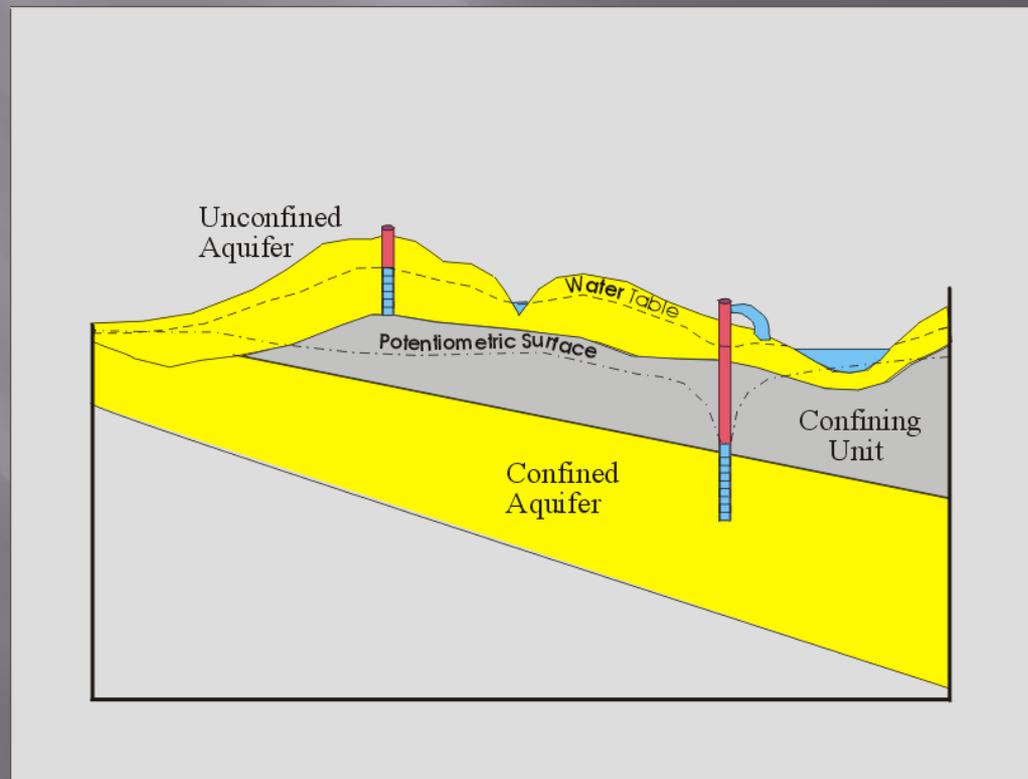


Minimize drawdown

What is drawdown?

“Change in water level caused by pumping”

-www.groundwater.org



Minimize Drawdown

HOW DO WE DO THAT?

- WSSC Connections (Existing 1.4 MGD & Proposed Additional 5.0 MGD)
- Effluent Re-Use - Power Plants/Industrial Users
- Well Field Optimization & Automation
- Bryans Road shift to the Patuxent aquifer
 - ▶ Reduce Lower Patapsco Withdrawals
 - ▶ Shift to Patuxent Wells

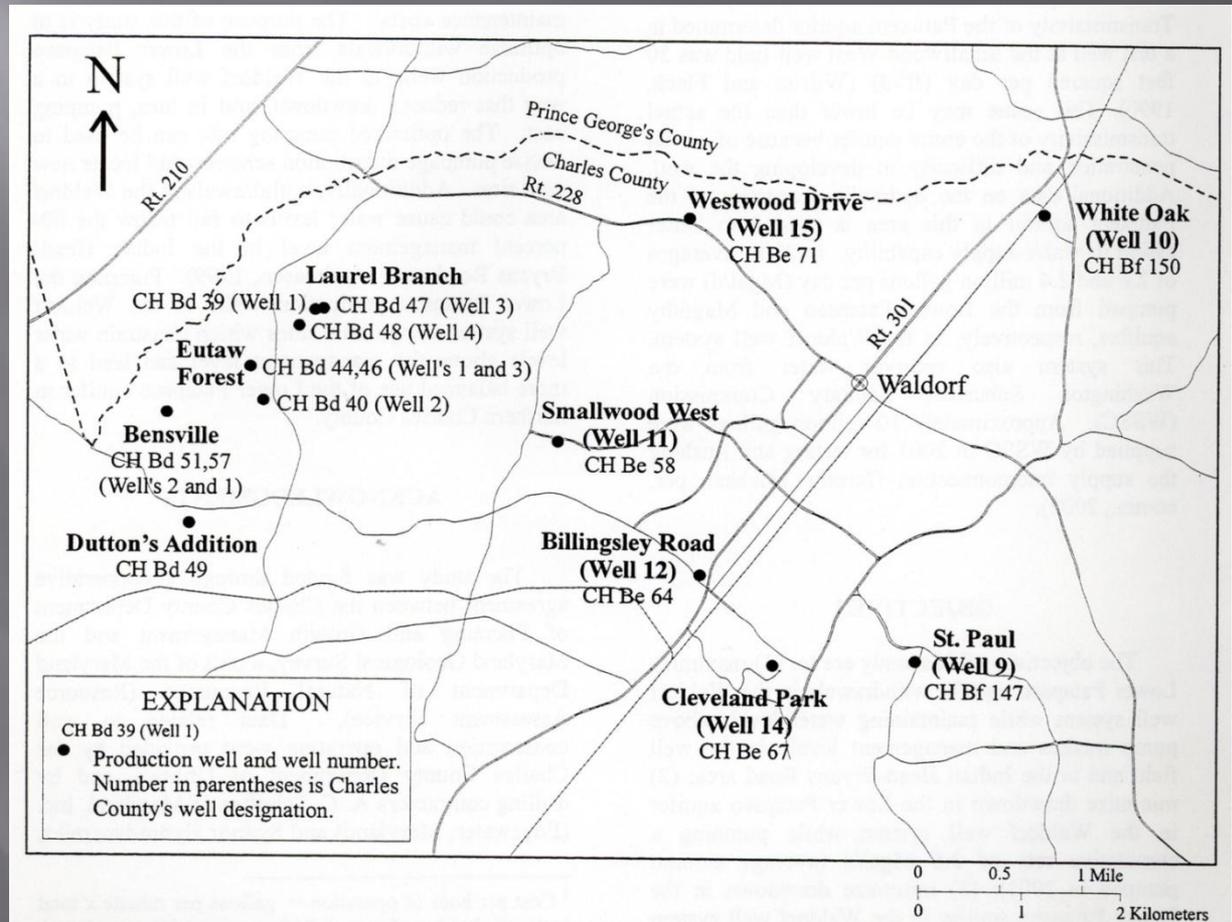
Utilize Down-dip Area

Implementation Measures

- Existing Well #15
- Existing Well #16
- Proposed Well #17
- Well Field Management Plan
 - ▶ Feasibility Study
 - ▶ Policy changes in Comprehensive Plans
 - ▶ Engineering & Design
 - ▶ Right of Way acquisition
 - ▶ Construction

Well Field Management

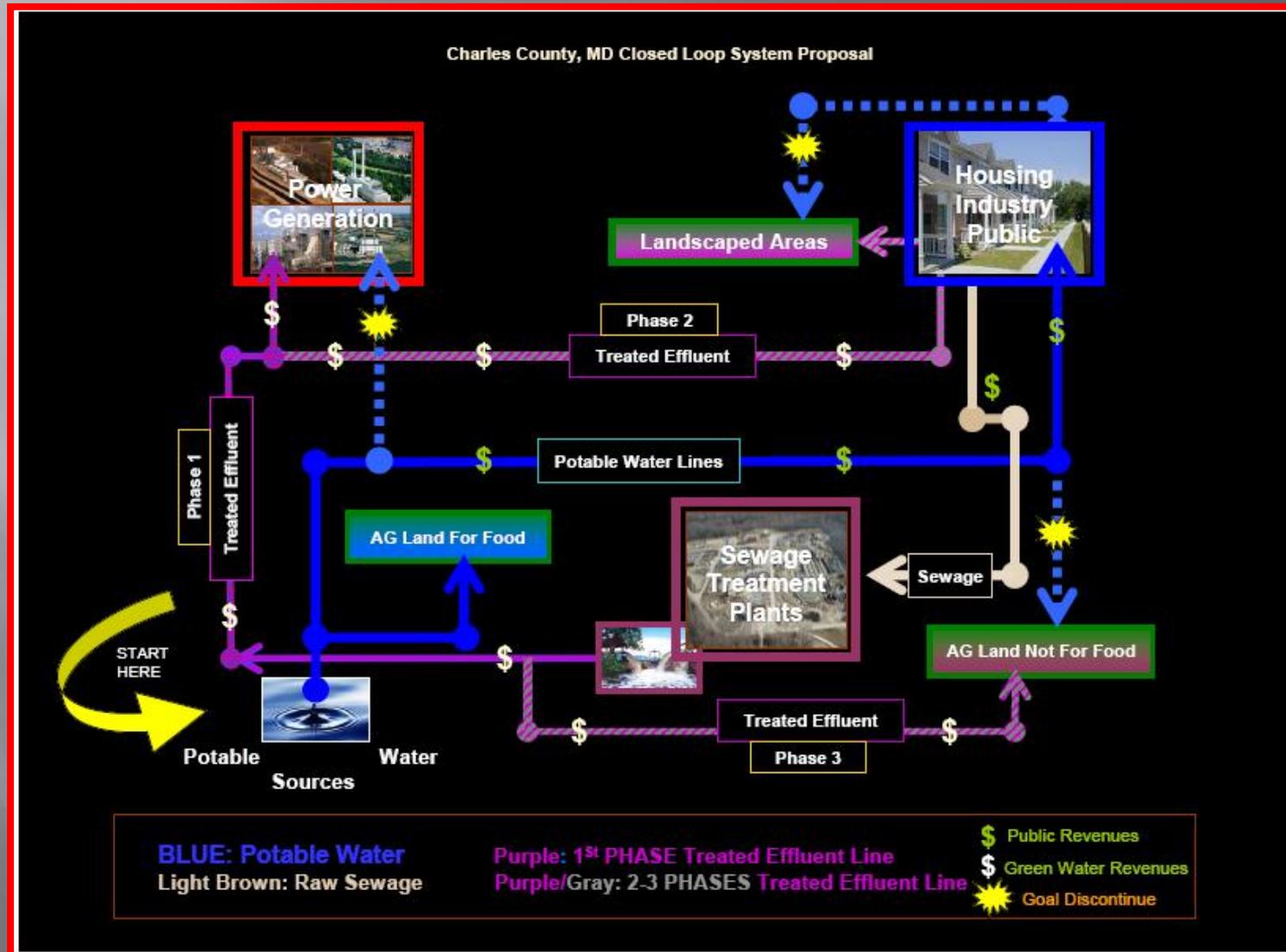
- Optimize Withdraws based on MGS Studies
- Automate Operations
- Plan new wells based on this strategy
- Increase storage
- Optimize distribution



Water Re-Use/Closed Loop

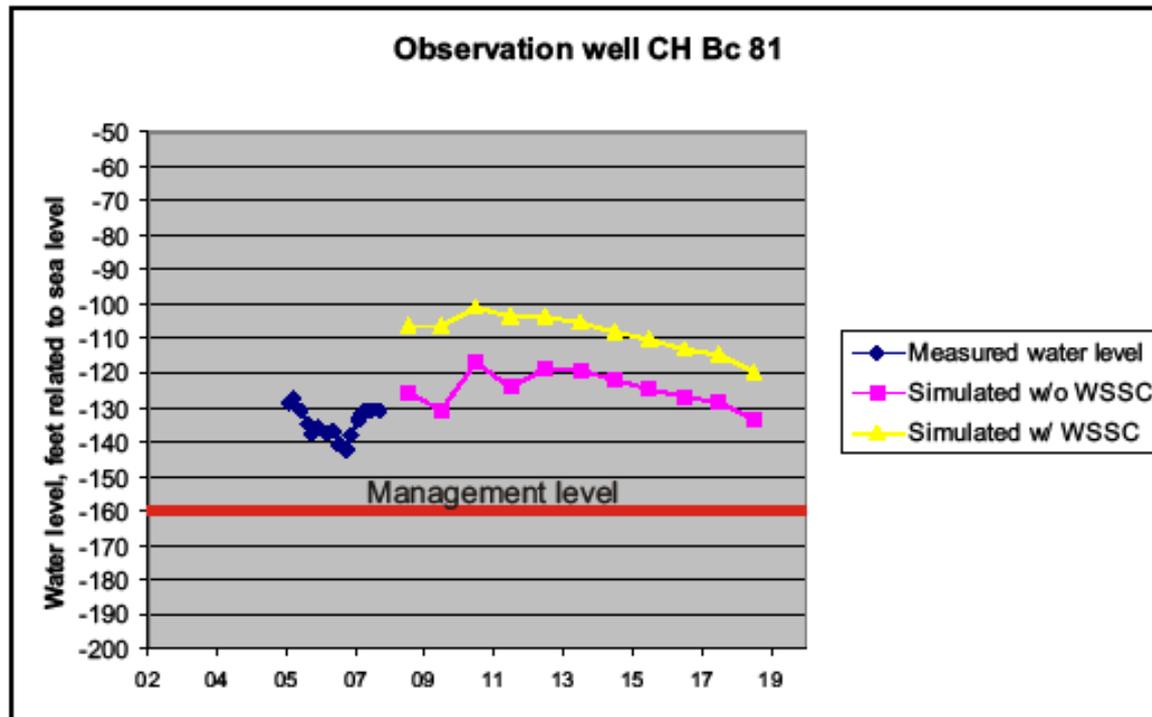
- Re-use water from WWTPs for:
 - Industrial Uses
 - Power Generation Facilities
 - Irrigation
 - Non-consumable crops
- Reduces dependence on Potable Water
- Preserves potable water sources
- Reduces open water discharges of WWTPs

Water Re-Use/Closed Loop



Supplement our water system with alternatives to groundwater

Why is this important?



Supplement our water system with alternatives to groundwater

Implementation Measures & Strategies

- Existing 1.4 MGD from WSSC
- Proposed 5.0 MGD from WSSC
- Alternative Sources
 - ▶ Surface Water Treatment Plant
 - ▶ Water Re-use

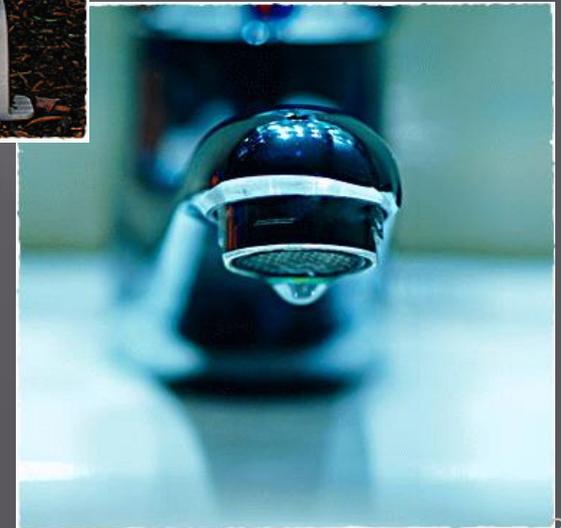
Water Conservation Program

How will this help?

- If one person shortens their shower by 2 minutes, up to 430 gallons per month can be saved.
- If you stop running water while brushing your teeth, you can save about 90 gallons per month.
- If everyone in the County did these two things, we'd save 77 Mil. Gallons/Month or 2.56 MGD
- Imagine that this effort is applied to multiple personal water habits:
 - Shaving/Showering
 - Irrigation/Car Washing

Water Conservation Program

- ▣ Outreach
- ▣ Water Re-use
- ▣ Water Billing



Water Conservation Program

Outreach & Education:

- ▣ Education is one of the most effective tools
- ▣ Presentations to Schools
- ▣ Public Seminars
- ▣ Media Campaigns
- ▣ Rewards, Discounts, and Incentives

Water Conservation Program

Water Re-Use:

- ▣ PANDA- Brandywine Plant
 - Uses and average of 454,604 GPD
 - From 1997 to 2007 = 1.8 Billion gallons of treated effluent water from the Mattawoman WWTP
- ▣ CPV – St. Charles Plant (proposed)
- ▣ Other Industrial Users
- ▣ Landscape Irrigation (Optional)

Water Conservation Program

Water Billing - Tiered Rate Structure:

- ▣ County is evaluating a graduated rate structure
- ▣ Encourages conservation
- ▣ Higher rates for heavy users
- ▣ Eliminate requests for sub-meters
- ▣ Will continue operational & capital costs
- ▣ Must achieve financial balance

Summary

Charles County has a good foundation and plan for the future of water resources.

Strategies

- Continue to Monitor Groundwater Levels
- Minimize drawdown in Magothy & Patapsco aquifers
- Utilize Down-dip Area
- Manage groundwater pumping
- Expand Water Re-Use/Build Closed Loop System
- Supplement water systems with alternatives to groundwater
- Water Conservation Program

Thank You

SEND QUESTIONS/COMMENTS TO:

JASON GROTH

CHARLES COUNTY PLANNING &
GROWTH MANAGEMENT

301-396-5814

GROTHJ@CHARLESCOUNTY.ORG