

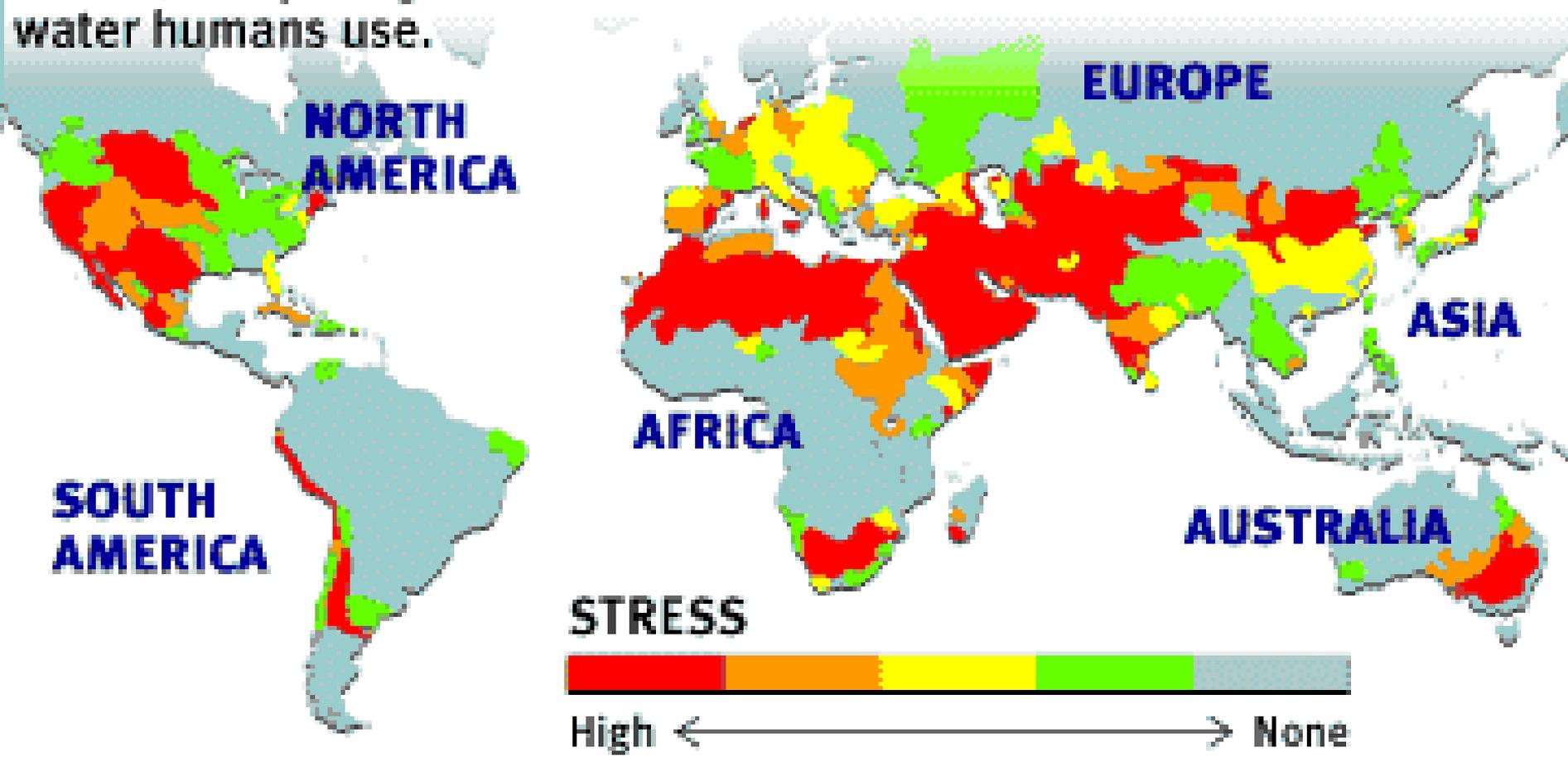
# **WATER RIGHTS - -**

## **Economic & Legal Issues**

**Nancy A. Norton and Virgil J. Norton**  
**Flint River Water Policy and Planning Center**  
**Albany State University**



**Stressed out** This map shows stress on the world's major river basins, comparing the amount of water available to the amount of water humans use.



SOURCE: World Commission on Water in the 21st Century

MSNBC

# A DIFFICULT TRAIL TO PEACE

## Water

- USAGE** Israelis use same as in U.S.: 110 cubic meters per capita per year. Jordanians use half that: 50cm per capita per year. Palestinians use a third: 30cm per capita per year.
- WHY THE DISPARITY?** Israel has been "stealing" Jordanian water from the Sea of Galilee and Palestinian water under the West Bank, forcing the Jordanians and Palestinians to ration what's left.
- WHERE DOES ISRAEL GET ITS WATER?** Israel gets roughly one-third from the Sea of Galilee, 40 percent from the Mountain Aquifers under the West Bank and the rest from the Coastal Aquifer, which also is the sole water supply for the Gaza Strip. This Coastal Aquifer is overpumped and badly polluted, both by seawater and surface contamination from inadequate sewage treatment. It falls far below drinking water standards in the U.S. and Europe.
- WEST BANK WATER** Since the 1967 war, Israel has become extraordinarily dependent on the West Bank aquifers; 83 percent of their water goes to the Jewish state, leaving just 17 percent for 200,000 Jewish settlers and 1.8 million Palestinians. The settlers use 50 million cubic meters of water; nearly 10 times as many Palestinians have to make do with 110 million cubic meters.
- COST** The settlers, subsidized by the Israeli government, pay only 12 cents per cubic meter for water while the Palestinians pay 50 cents for water delivered by the Israeli water carrier Mekorot.
- JORDAN** Under their 1994 peace agreement, Israel is supposed to supply Jordan with 50 million cubic meters of water from the Sea of Galilee annually. It has not done, s water shortages in Jordan necessitate year-round rationing with each household limited to 22 gallons a day. Jordan also complains that Israel is trying to make up its shortfall with poorly treated waste water.
- SHORTAGES** In the past 30 years, the amount of fresh water per capita in the region (Israel, Jordan and the Palestinian territories) has decreased by 56 percent. If the population doubles, as predicted, over the next 15 to 20 years, the amount of available water will decrease again by half, with a 1.5 billion cubic meter deficit projected for 2015.
- SOLUTION:** The cost of desalinating seawater has halved since 1984, and 120 countries are now using it. The island of Malta, for example, derives 80 percent of its water from the sea. Because the quality of their water is so bad, Israelis buy drinking water at an average cost of \$700 per cubic meter. They could get the same amount of drinking water for 63 cents if Israel had desalination plants.



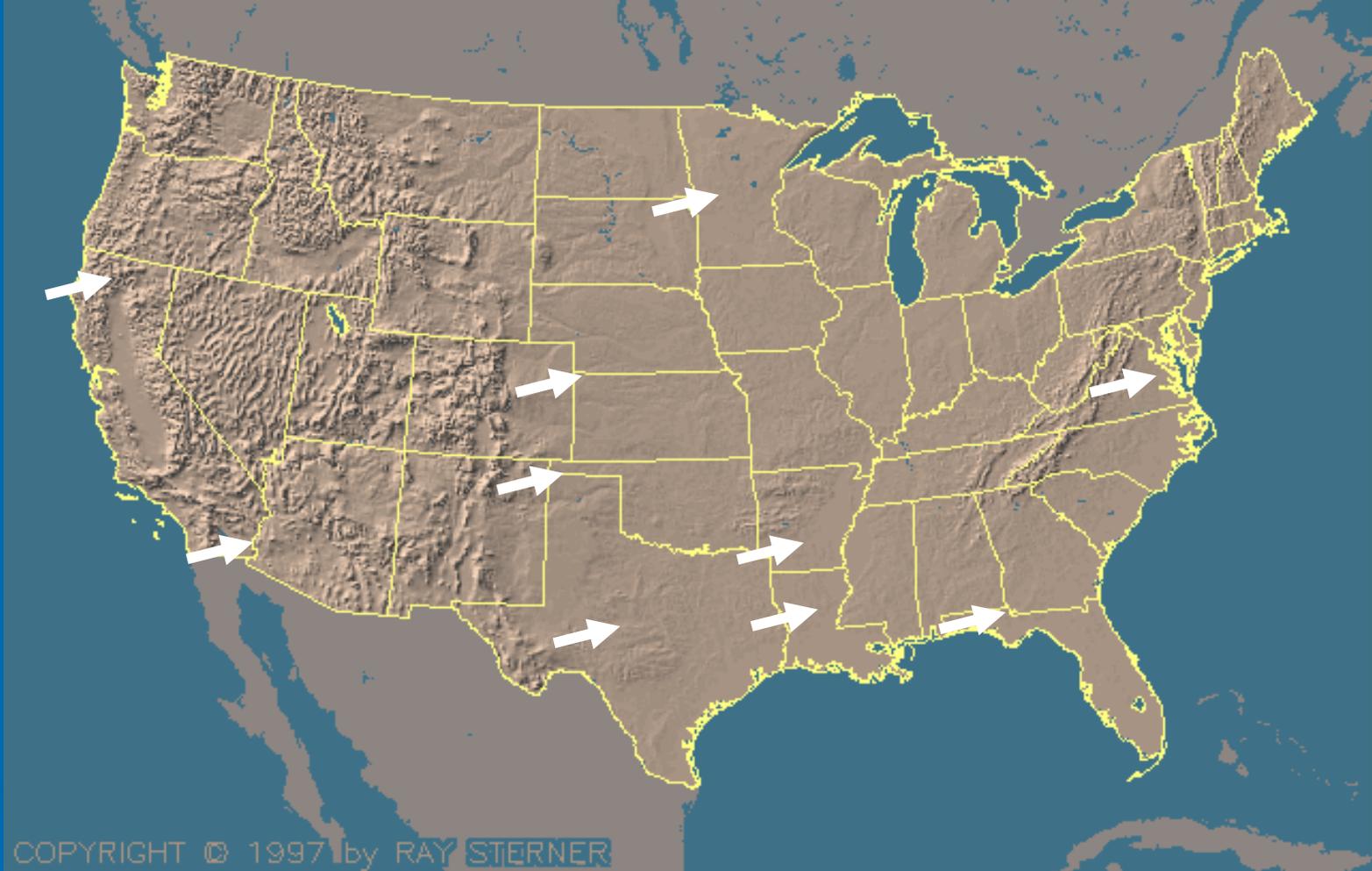
Population	
<b>Israel:</b>	5 million Jews, 1 million Arabs
<b>Gaza:</b>	1.02 million Palestinians
<b>West Bank and East Jerusalem:</b>	1.8 million Palestinians
<b>Jewish settlers:</b>	200,000
<b>Unregistered Palestinian refugees (throughout the Mideast):</b>	3.6 million

Note: The international standard for water usage is measured in cubic meters (CM), with MCM being million cubic meters. One cubic meter equals 264 gallons.

Source: Center for Middle East Peace and Economic Cooperation



Eric Baker/News Staff Artist



# Some U.S. Water “Hot Spots”

# **“Threats” to Agriculture in the Southeast.**

- **Endangered species issues**
- **Environmental & land use regulations**
- **Fuel & other input costs (pumping)**
- **Declining aquifer levels & stream flows**
  - Especially in drought periods - - when needed
- **Competition among water users**
  - Intrastate & interstate

\*\*\*\* Can Yoda save latest 'Star Wars'? / F1  
TV judge gets giddy over fashion / F1



Bulldogs, Gators take the party to prime time / C1

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Sunny, 77°/49°  
D16

SIDE TODAY  
N. tightens sanctions against Iraq

U.N. Security Council approves an overhaul of sanctions against Iraq, speeding delivery of food and medicine while withholding an estimated \$1 billion in military cargo. A3

# Atlanta guzzling water

## Metro thirst exceeds predictions

By CHARLES SEABROOK  
cseabrook@ajc.com

Chattahoochee River can provide, decades before it was forecast to have reached that limit. If the assessment is verified by data being collected and analyzed in coming weeks, it could stymie new development in the region. Metropolitan

Atlanta would have to stop growing, or enact tougher conservation measures, or secure new sources of water, an expensive and politically daunting task. South Carolina and Tennessee have warned there would

be major battles if Atlanta tried to tap the Savannah or Tennessee river systems. And residents around Lake Allatoona say they would fight efforts to draw more water from their lake for the metro region.

State environmental officials had predicted metro Atlanta would not exhaust Lanier and the Chattahoochee until 2030. Officials with the Georgia

Environmental Protection Division insisted Tuesday their data show that projection is still sound.

But new water use data presented by the U.S. Army Corps of Engineers suggest the region already is close to reaching — or in some cases exceeding — the predicted 2030 levels.

▶ Please see WATER, A13

# Half empty

## Little consensus whether water supply is adequate to meet region's needs

By STACY SHELTON  
sshelton@ajc.com

State officials say there's enough water in the Chattahoochee River and Lake Lanier to keep Atlanta growing through 2030.

Federal authorities who operate the lake's Buford Dam say there's barely enough to quench metro Atlanta's thirst now.

Who's right? The growth and future of metropolitan Atlanta depend on the correct answer to that question.

"Who knows how fast we can really grow and where we'll grow?" asked Joel Cowan, a developer board member picked to chair the water planning board nicknamed "WETTA" for its resemblance to the transportation agency GRTA. To assure that the water will support the region's growth is "a mere guess," he said.



CHECK OUT THESE DOLLS

Local firefighters inspire new line of action figures

METRO, C1



Tough times at summer camps

BUSINESS, Q1

METRO \*\*\*\*\*

# The Atlanta Journal-Constitution SUNDAY

The State  
SOUTH CAROLINA'S LARGEST NEWSPAPER Saturday, July 13, 2002 COLUMBIA, S.C. • SWITCHBOARD (803) 971-6161 • STATE EDITION

## S.C. rivers and creeks reach record lows as drought lingers



Pee Dee River, other waterways in danger as N.C. mulls holding water

By CHUCK CHUMBO  
Staff Writer

The Great Pee Dee River isn't the only stream in South Carolina in danger of drying up.

A state hydrologist said Friday seven streams already have reached 50-year lows as a severe drought enters its fifth year.

That revelation follows reports earlier this week that the Pee Dee could be reduced to a trickle if North Carolina officials are allowed to hold more water in upstream artificial lakes.

North Carolina also is in the grips of the drought. Water supplies are so tight that on Friday, N.C. Gov. Mike Easley asked the

# Ebbing water supply will change life in Georgia



PAUL BEARCE / Albuquerque Journal

INSIDE METRO  
TWO CITIES WITH WATER SAVING PLANS

▶ Albuquerque dents forgo lush green lawns as conservation rules kick in. C6

▶ Boston cuts use 25 percent a plan that react into bathrooms.

A newly landscaped median in Albuquerque, N.M., uses plants that don't require a lot of water.

# Why worry about “Water Wars”?



# What's involved?

## U.S Constitution

- **Equitable Apportionment**
  - **Commerce Clause (Sporhase Case)**
  - **“Takings”**
- 

# Equitable Apportionment

- **“The doctrine of equitable apportionment is neither dependent on nor bound by existing legal rights to the resource being apportioned.”**
- **“ ... a State may not preserve solely for its own inhabitants, natural resources located within its borders.”**
- **“States have an affirmative duty ... to conserve and even to augment the natural resources within their borders for the benefit of other States.”**

# Federal Commerce Clause and State Actions

**“The federal commerce clause ... prohibits state or local laws that discriminate against interstate commerce ...”**

Citation: Cases and Materials on Water Law, Gould and Grant. American Casebook Series - - West Group



# “Takings”

## U.S. Constitution - - 5<sup>th</sup> Amendment

“No person ... shall (have taken from them) private property ... for public use without just compensation”

What happens if farmers get “shut down”?

- Water rights or right to use?
- Financial investment?

# Alternative Solutions

- **Command & Control**
- **Voluntary Incentives**
- **Combination of above**

# Management Responses To Scarcity - - Examples

- **Klamath Irrigation District**
  - Still an issue
- **Flint River Basin**
- **Nebraska**

# Klamath

- **Endangered Species**
- **Command and control response - -  
big time!!**

# Flint River Drought Protection Act (Incentive based - - with “hammer”)

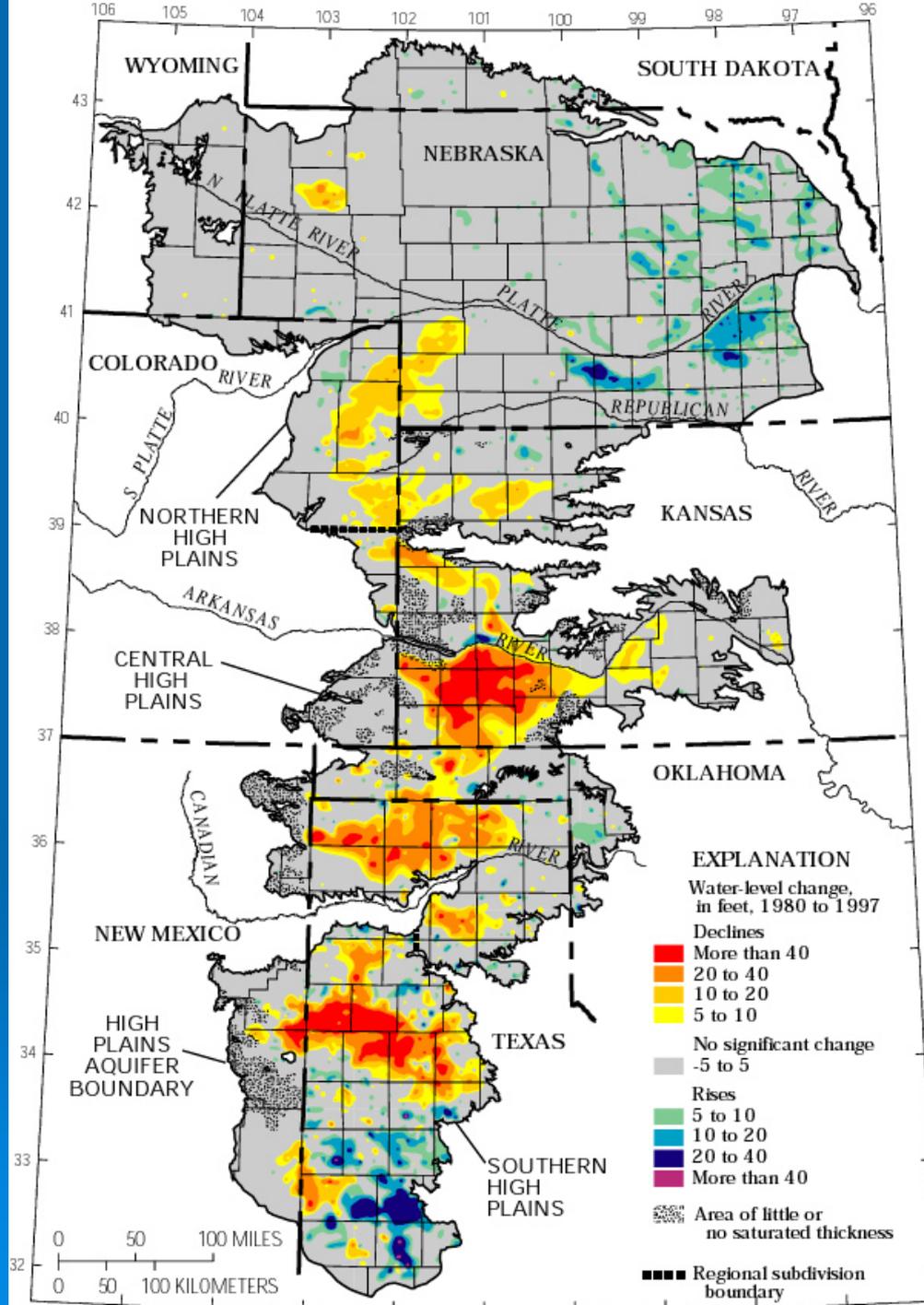
Problems - - endangered species and threat of interstate litigation

## ➤ **Actions:**

- **Moratorium on new permits**
- **Auctions - - retire surface irrigation**
  - > 2001 - - 33,101 acres at \$136/acre (\$4.5 million)
  - > 2002 - - 40,894 acres @ \$128/acre (\$5.2 million)

➤ Is this a “Takings” precedent??

# Water level change in High Plains Aquifer, 1980-1997



# Issues Faced By Upper Republican River NRD

- Declining Ground Water Levels
- Interaction-ground & surface water
- Kansas litigation against NE & CO

# **NRD Management Regulations (command/control + incentives)**

- **Moratorium on all new wells**
- **Flowmeters & reporting of all uses**
- **Allocations for all uses**
  - > **Five-year irrigation allocation**
  - > **Carry-forward allowed**
  - > **Pooling of some irrigation allocations**
  - > **Transfers allowed - including change of use**

# Irrigator Behavior

- **If no allocations or regulations**
  - Farmer maximizes current net returns
- **If moratorium, allocations and carry-forward**
  - Farmer will maximize the combined net returns from current water use and potential future use or sale.

# “With” URNRD Regulations

- There is an opportunity cost to using each extra inch today
- The cost is the foregone benefits in the future, “marginal user cost”
- Without regulations, no incentive to conserve

# What kinds of future benefits are there?

- **Insuring against risk of multi-year drought**
- Banked water is capitalized into value of land
- **Potential to market in future**
- Plan to develop “satellite” pivot
- **Extend life of aquifer**

# Results of URNRD Regulations

- Reduced ground water use
- **Aquifer declines slowed - some positive changes**
- Water use treated as a farm management decision
  - labor, fertilizer, seed population, etc
- **Conservation culture developed**
  - Allocation = 14.5" per year
  - Use = 11.2" over past decade
- Data base established
- **Property rights established**

# Why do URNRD regulations provide incentive to conserve?

- Without the regulations, farmers optimally use water until:

$$MNV_{\text{today}} = 0$$

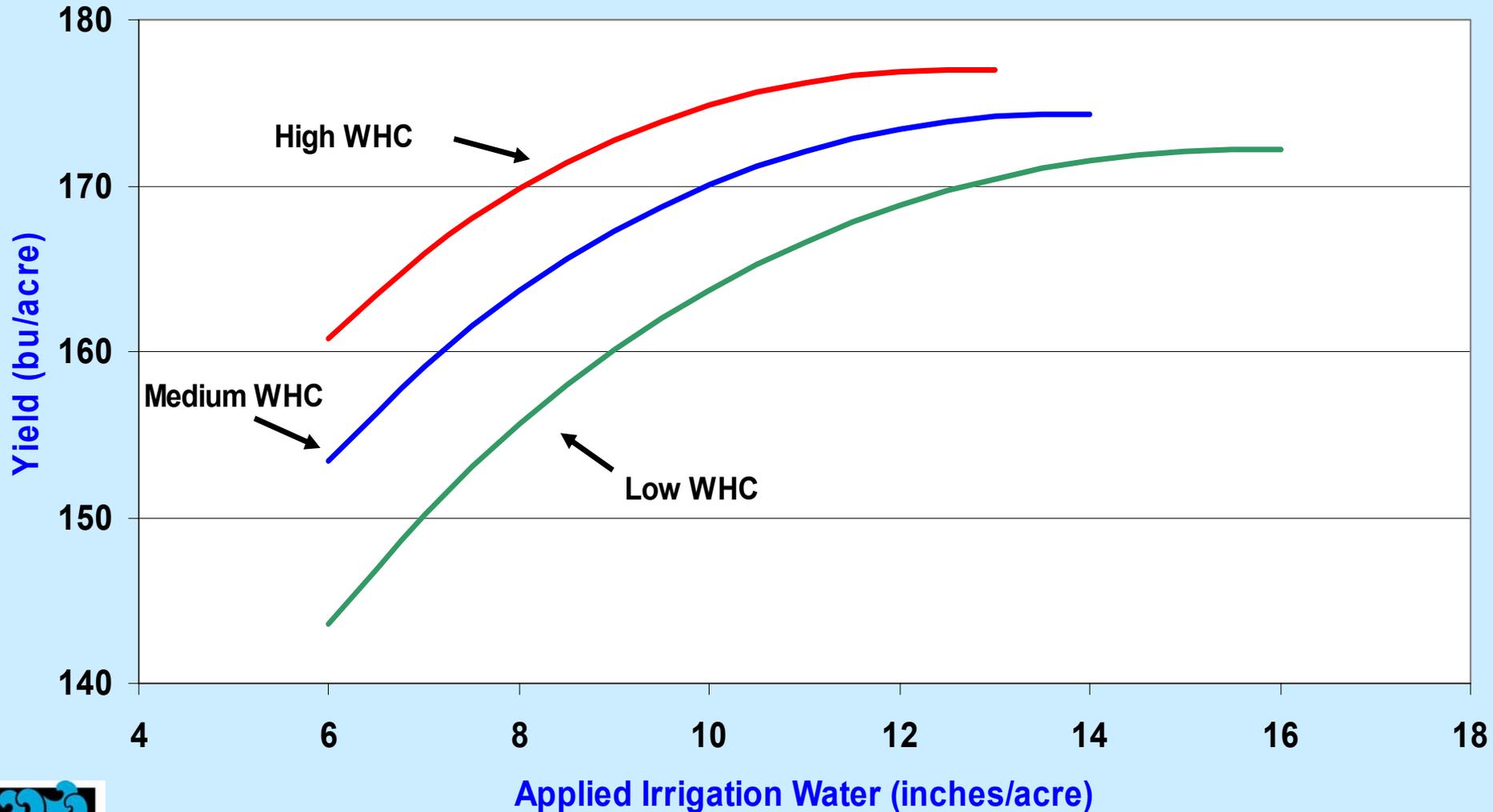
- With regulations, farmers optimally use water until:

$$MNV_{\text{today}} = \text{discounted } MNV_{\text{future}} = MUC$$

# Sources of Data for Model

- Yields and pumping costs – survey (1995-98)
- Irrigation use -- URNRD records
- Effective rainfall by phase of growing season
- PET data -- climate stations in and near area
- Soil water holding capacity

# Corn Yield Response to Applied Water, by Soil Water Holding Capacity (WHC)



# Water Use, Marginal User Costs, and Differences in Net Return with URNRD Regulations, by WHC

Water Holding Capacity	Irrg Use w/ Regs (in/acre)	Irrg Use w/o Regs (in/acre)	Amount Conserved (in/acre)	Marginal User Cost ( $\Delta\$/\Delta\text{in}$ )	Difference in NR ( $\$/\text{acre}$ )
All Soils	10.0"	12.8"	2.8"	\$4.91	-\$ 8.89
Low	11.4"	14.7"	3.3" *	\$4.93	-\$10.39
High	8.8"	11.3"	2.5" *	\$5.11	-\$ 8.17

# **\* PROBLEM \***

**Under conditions where new” users cannot acquire access to water supplies, how does a region:**

- Take advantage of economic development opportunities?**
- Avoid conditions leading to a stagnant economy?**

# CAN WE GET “MORE” WATER?

- **From out of state -- ??**
- **Interbasin transfers - ??**
- **Aquifer recharge for storage - ??**
- **Desalination - ??**
- **Dams & reservoirs - ??**
- **Conservation/improved efficiency - ??**

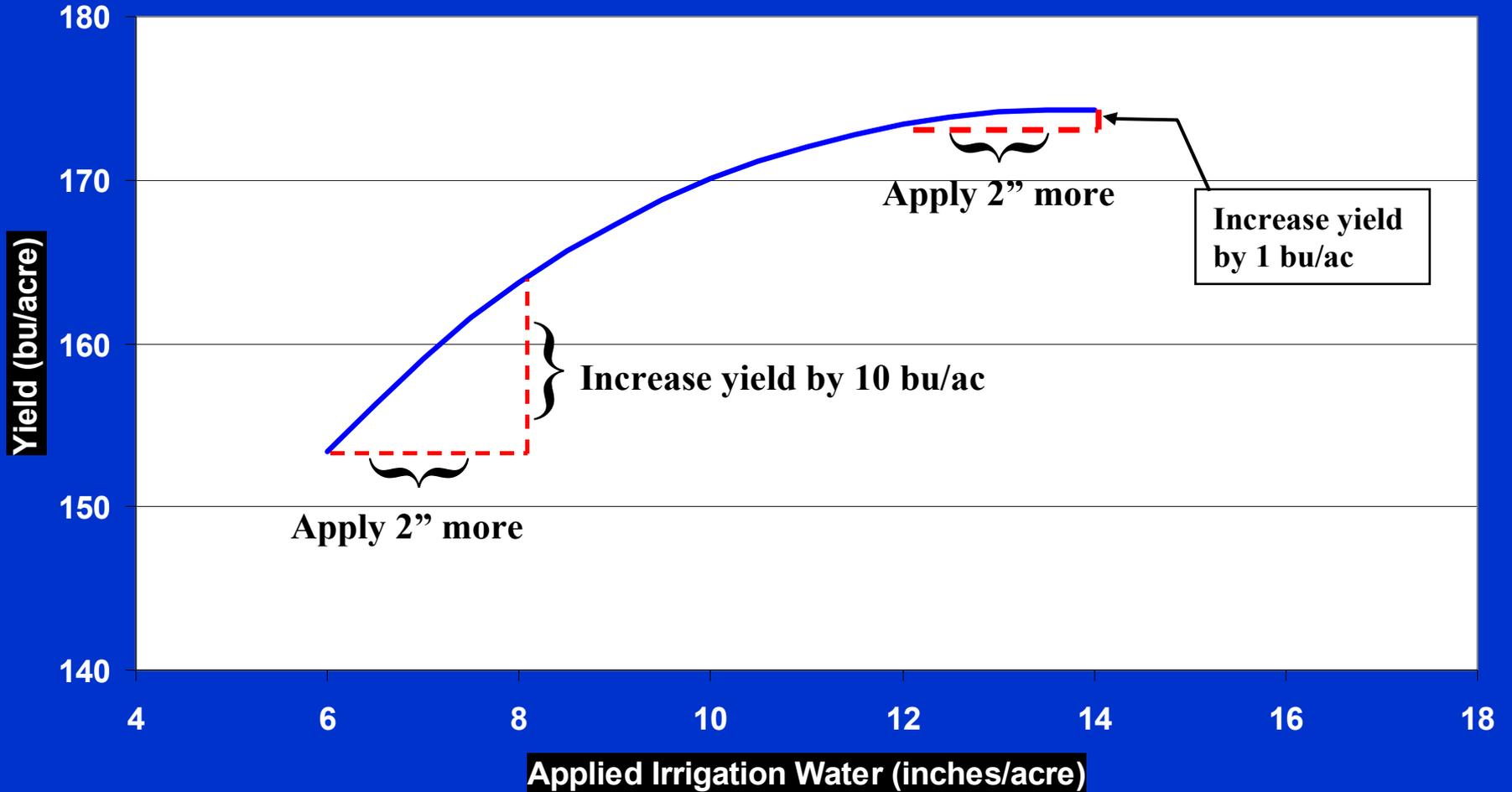
# Efficiency Dictates

- Produce goods/services desired by society
- Produce at least cost with efficient technology
- Resources should be able to move freely

# Benefits of Allowing Transfers

- **Water can be traded to higher-valued uses**
- **Increases economic activity**
- **Encourages conservation - - provided ...**

# Figure 1. Corn Yield Response to Applied Water



# “Cautions” with Transfers

## Working Paper:

- Protect third-party interests
- Protect streams flows and/or sustainability of aquifer
- Protect economic base of region

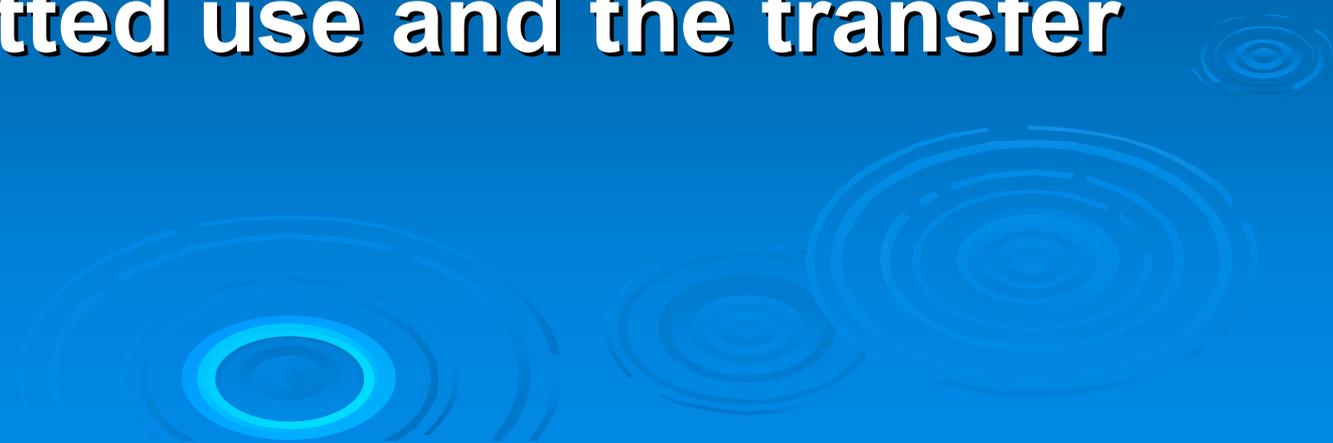
# Rules For Water Transfers (Farmer's Responsibility)

## Farmer agrees to:

- Quantify permitted use
- **Transfer all or part of his right.**
- **If only part of his right:**
  - Install sealed meter
  - **Grant permission to monitor meter**
  - Pay annual fee for monitoring

# **Rules For Water Transfers (EPD's Responsibility)**

## **The EPD will:**

- Do appropriate notification and hold public hearing**
  - Approve or disapprove the permitted use and the transfer**
- 
- The background of the slide features several concentric, glowing blue circles that resemble ripples on water, scattered across the lower half of the page.

# Rules For Water Transfers (New User's Responsibility)

## The new user will:

- Acquire permit for use from EPD
- **Abide by diversion limits**
- Acquire rights up to 200% of proposed use; residual ceded to EPD for retirement
- **Be subject to forfeiture for non-use**

# HB 237

## Only a paper memorial - - -

- Allowed trading
- Subject to all of the above conditions
- Recommended by both House and Senate Natural Resource Committees after hearings
- Passed the House
- Alternative proposed in Senate (died), then slight amendment & passed
- @ 11:30 p.m. on last night “all water will flow to Atlanta” – lost in the House in vote for amended Senate version