

2011 Water Projects for the Platte Overappropriated Area Basin-Wide Plan and Integrated Management Plans

Basin-Wide Meeting
June 21, 2012

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Overview

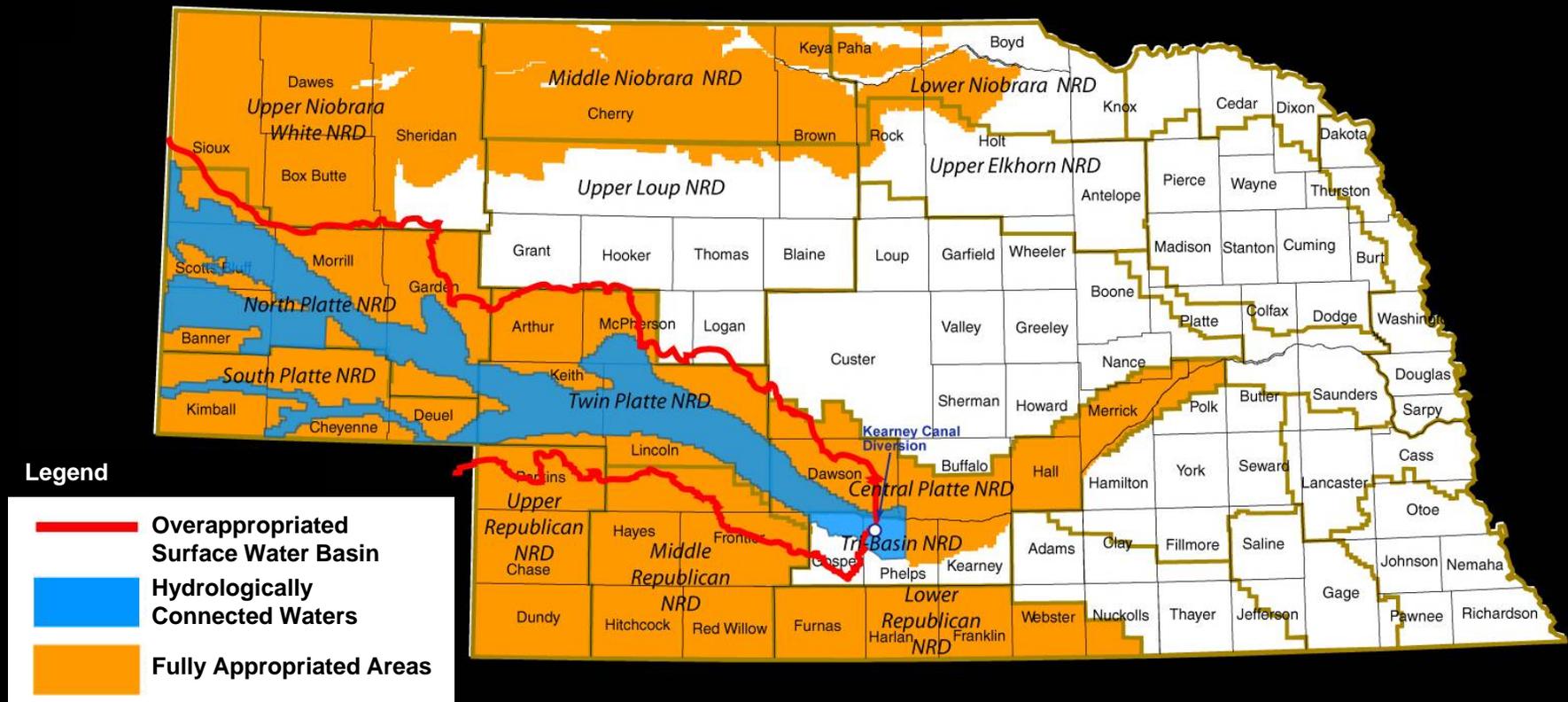
- 1. Review the Basin-Wide Plan and Integrated Management Plans**
- 2. Report on Water Projects being Implemented to meet the Goals and Objectives**
- 3. Report on Development of Methods and Data**



Basin-Wide Plan and Integrated Management Plans

- **Joint Integrated Water Resources Management**
- **Area: Overappropriated Portions of the Platte River Basin in Nebraska**
 - Upstream of the Kearney Canal Diversion
 - Hydrologically connected surface and ground water
 - Includes 5 Natural Resources Districts (NRDs)
 - Central Platte
 - North Platte
 - South Platte
 - Tri-Basin
 - Twin Platte

Fully and Overappropriated Areas



Basin-Wide Plan Goals and Objectives

- **Keep the Plan Current – Adaptive Management**
- **Work Cooperatively to Identify and Investigate Disputes**



Basin-Wide Plan Goals and Objectives

- **Achieve and Sustain a Fully Appropriated Condition**
 - **Offset streamflow depletions**
 - **Identify Projects to Enhance Water Supply**
 - **Develop Evaluation Methods and Data**

Water Enhancement Projects



- **Provide Accretions from**
 - Conjunctive Management Projects
 - Groundwater Retiming Projects
 - Regulatory Actions
 - Retiring Land from Irrigation

Conjunctive Management Projects

- **Conjunctive Management**

- Cozad Canal Conjunctive Management (2014-2019)
- Thirty-Mile Canal Conjunctive Management (2014-2019)
- Canal Seepage Projects: 2011 Demonstration
- Elwood Reservoir
- J2 Re-regulating Reservoir (WAPP)



Conjunctive Management: Cozad Canal and Thirty-Mile Canal

- Cozad Canal (2014-2019) 8,000 a-f/yr
- Thirty-Mile Canal (2014-2019) 8,000 a-f/yr



Average annual accretion



~16,000 a-f/yr

Conjunctive Management: Canal Seepage Projects: 2011 Demonstration

- for Groundwater Recharge and Flood Reduction
- Partners
 - 23 Canals
 - DNR
 - South Platte
 - Tri-Basin
 - Twin Platte
 - Central Platte
 - North Platte
- Results:
 - Diversion Total 200,000 a-f
 - Seepage Total 90,000 a-f
 - 2011-2019 Accretion Total 21,000 a-f

Average annual accretion ~2,300 a-f/yr

Conjunctive Management: Elwood Reservoir

■ Partners

- Central Nebraska Public Power Irrigation District (CNPPID)
- TBNRD

■ Diverted water in 2008 and 2009

- Gradual groundwater recharge estimated through 2019

Average annual accretion

~180 a-f/yr

**Ranging from 301 a-f in 2012
to 99 a-f in 2019**

Conjunctive Management: J-2 Re-regulating Reservoir

■ Partners

- Platte River Recovery Implementation Program
- Central Nebraska Public Power Irrigation District (CNPPID)
- DNR
- TPNRD, TBNRD, CPNRD

- **Stored water can be returned to the river when there are shortages to target flows**

Average annual accretion

10,200 a-f/yr

Groundwater Retiming Projects

- North Dry Creek (WAPP) 972 a-f/yr
- Kappa pipeline 168 a-f/yr



Average annual accretion



~1,100 a-f/yr

Regulatory Actions

- **Allocations**



Average annual accretion

~4,000 a-f/yr

**Ranging from 3,182 a-f in 2012
to 4,747 a-f in 2019**

Retiring Land from Irrigation



■ Programs

- AWEPP – Agricultural Water Enhancement Program
- CREP – Conservation Reserve Enhancement Program
- EQIP – Environmental Quality Incentives Program
- PBHEP – Platte Basin Habitat Enhancement Program
- Other programs (e.g., Pheasants Forever)

■ Results

- Permanent Retirements: 5,210 acres
- Temporary Retirements: 16,629 acres
(lasting from 3 to 15 years)



Average annual accretion

~ 6,000 a-f/yr

Total Average Annual Accretion from all Water Enhancement Projects

- **Conjunctive Management** ~28,700 a-f/yr
 - **Groundwater Retiming** ~1,100 a-f/yr
 - **Regulatory Actions and Retiring Land** ~10,000 a-f/yr
- Total Average Annual Accretion** ~40,000 a-f/yr

Basin-Wide Plan Goals and Objectives

- **Achieve and Sustain a Fully Appropriated Condition**
 - **Identify Projects to Enhance Water Supply**
 - To sustain a balance between water supply and use
 - To address water shortages in one NRD that may affect other NRDs
 - **Develop Evaluation Methods and Data**
 - To estimate depletions and accretions to streamflow

Monitoring via the Integrated Management Plans

- Part 1: Tracking and Reporting Water Use Activities
- **Part 2: Measuring the Success of Meeting the Goals and Objectives of the IMPs**
- Part 3: Evaluating the need for a Subsequent Increment



Monitoring via the Integrated Management Plans

- **Part 2: Measuring the Success of Meeting the Goals and Objectives of the IMPs**
 - Annual review and analysis of the balance of depletions and accretions
 - **5-Year Robust Review**

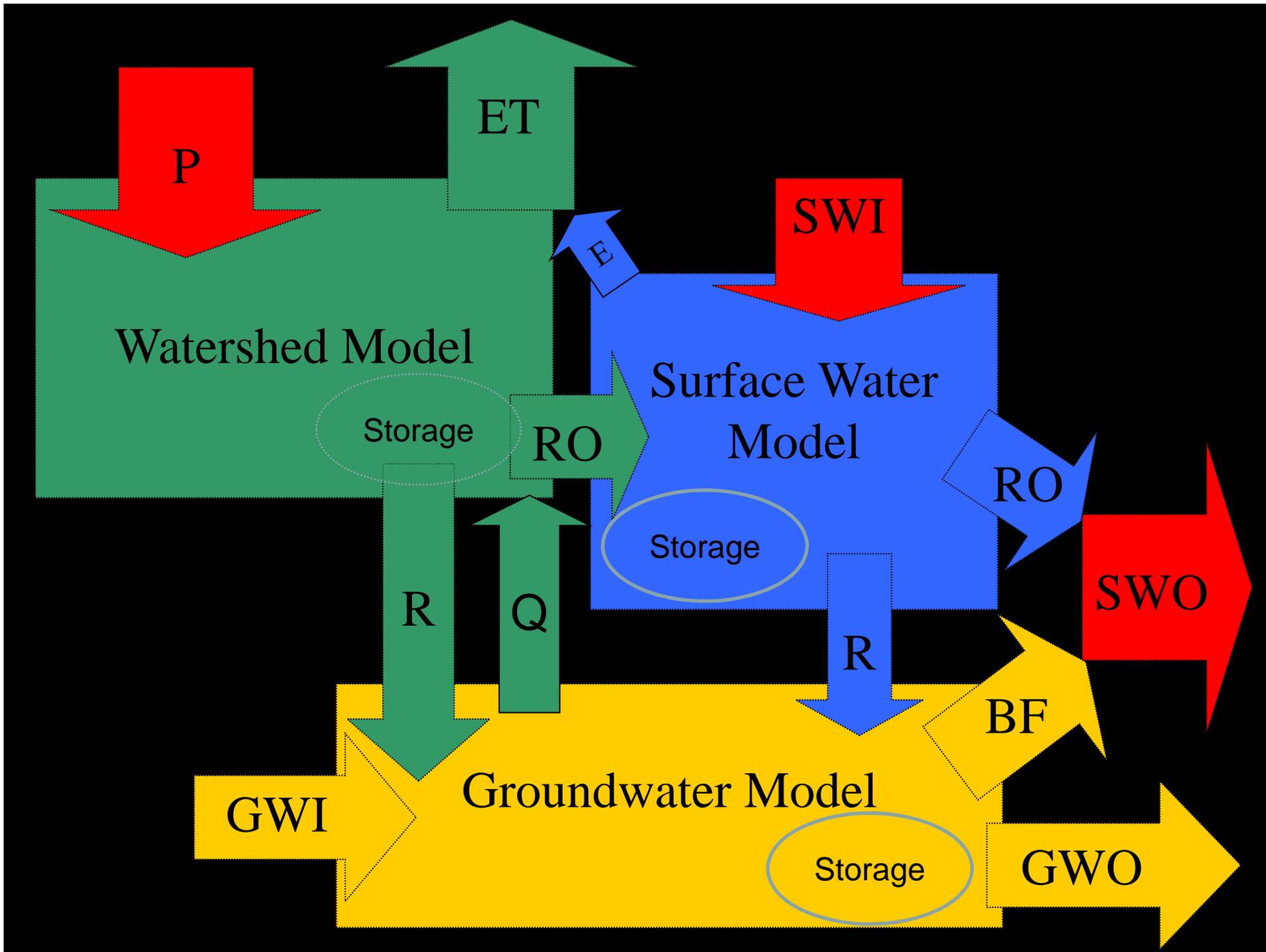


Update on the 5-Year Robust Review for 2005-2010

Evaluate the sufficiency of NRD and State measures to offset new and expanded uses

- **Water Budget**
 - Models
 - Dataset Development





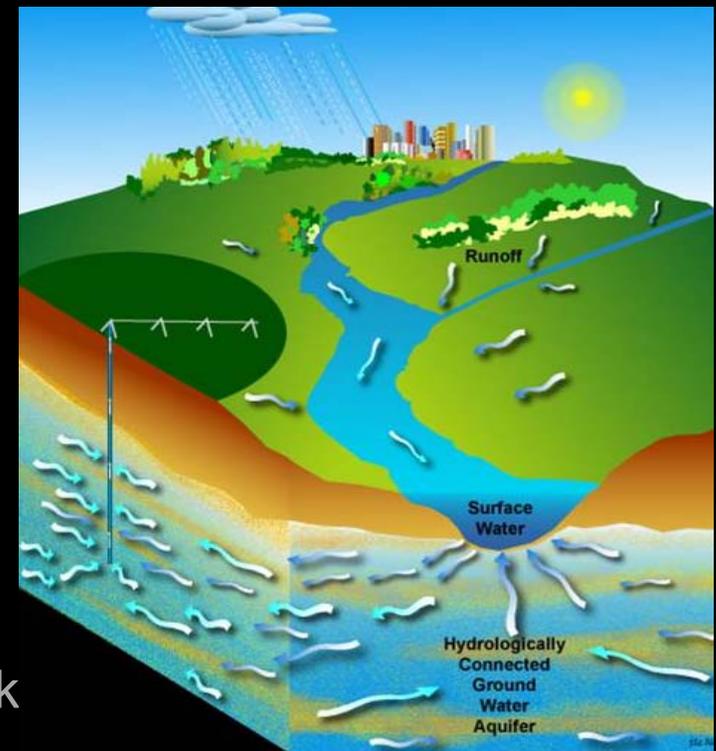
Models

- **COHYST 2010**

- the eastern portion of the Upper Platte Basin from Chapman, NE to the upstream end of Lake McConaughy

- **Western Water Use Model (WWUM)**

- upstream of Lake McConaughy to the Wyoming state line and Lodgepole Creek in the South Platte Basin



Dataset Development

- Irrigated Acres
- Municipal/Industrial & Rural Consumptive Use
- Livestock Consumptive Use
- Small Reservoirs and Sand Pits



Modeling Projects Status

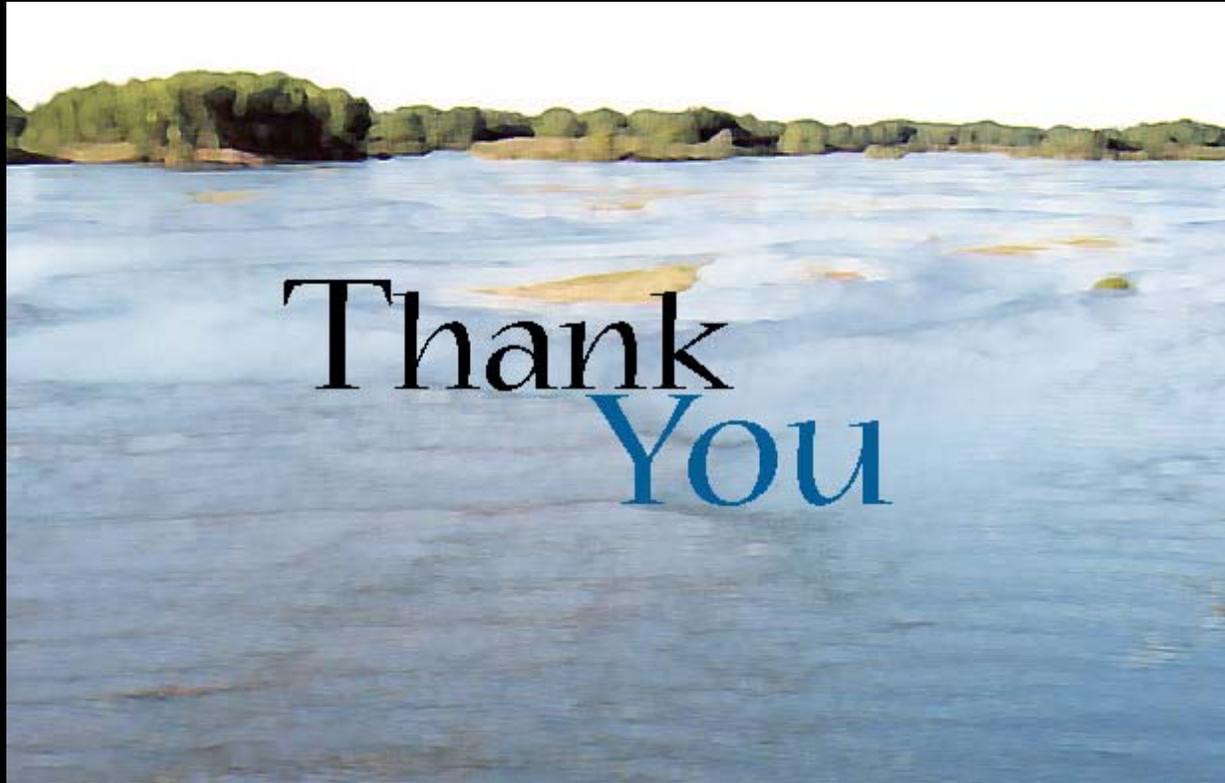
- **COHYST 2010**
 - **Watershed (CROPSIM and custom post-processing)**
 - **Routing (STELLA)**
 - **Groundwater (MODFLOW)**
 - **Integrated (CROPSIM, STELLA & MODFLOW)**

Modeling Projects Status

- **Western Water Use Model**
 - **Watershed (CROPSIM and custom post-processing)**
 - **Surface Water Operation (StateMod)**
 - **Groundwater (MODFLOW)**
 - **Integrated (CROPSIM, StateMod & MODFLOW)**

Modeling Projects: Next Steps

- Nebraska is finalizing a guidance document to outline the process for a robust assessment of all water use activities and mitigation measures using the datasets and modeling tools
- Peer Review of modeling tools by independent experts
- Populate models with the refined data
- Complete the robust assessment of the impacts of new or expanded uses (depletive activities) and mitigation measures since July 1, 1997 on the streamflow of the Platte River



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