

# Application of Modeling Tools for Water Accounting and Conjunctive Management

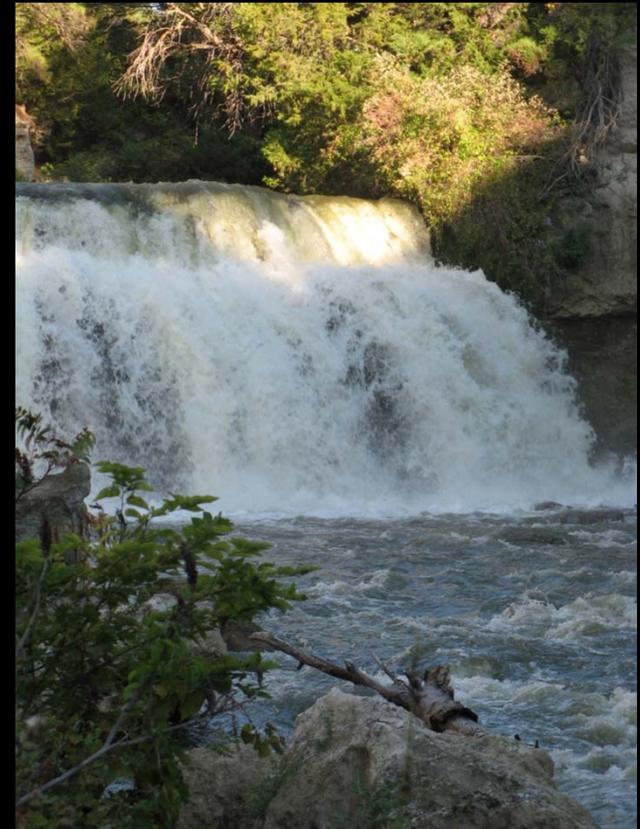
Brandi Flyr, Ph.D.  
Integrated Water Management Coordinator  
Nebraska Department of Natural Resources



# Overview

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- Modeling Tools
- Implementation of Tools
- Specific Projects
- Educational Tools

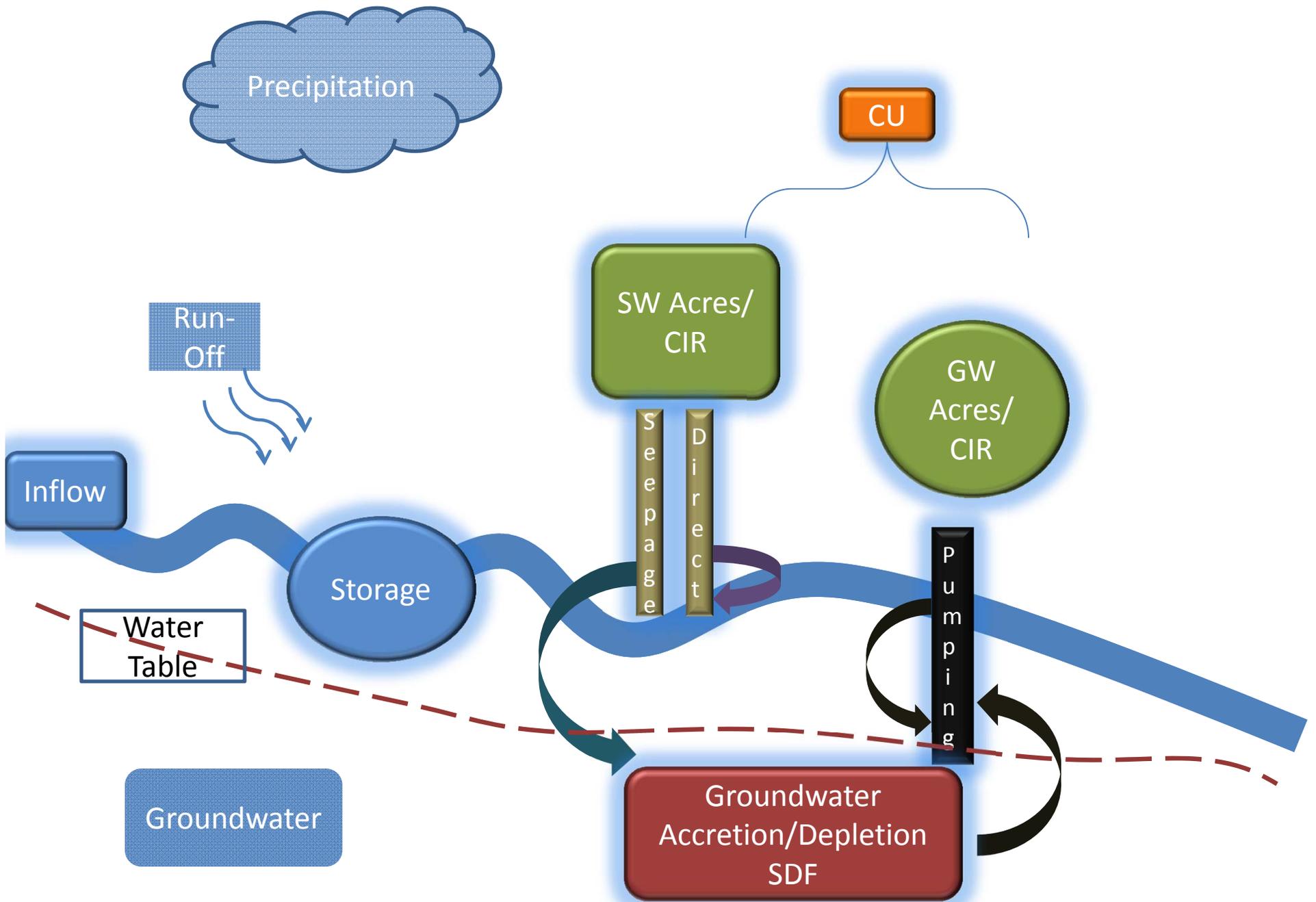


# What is Conjunctive Management?

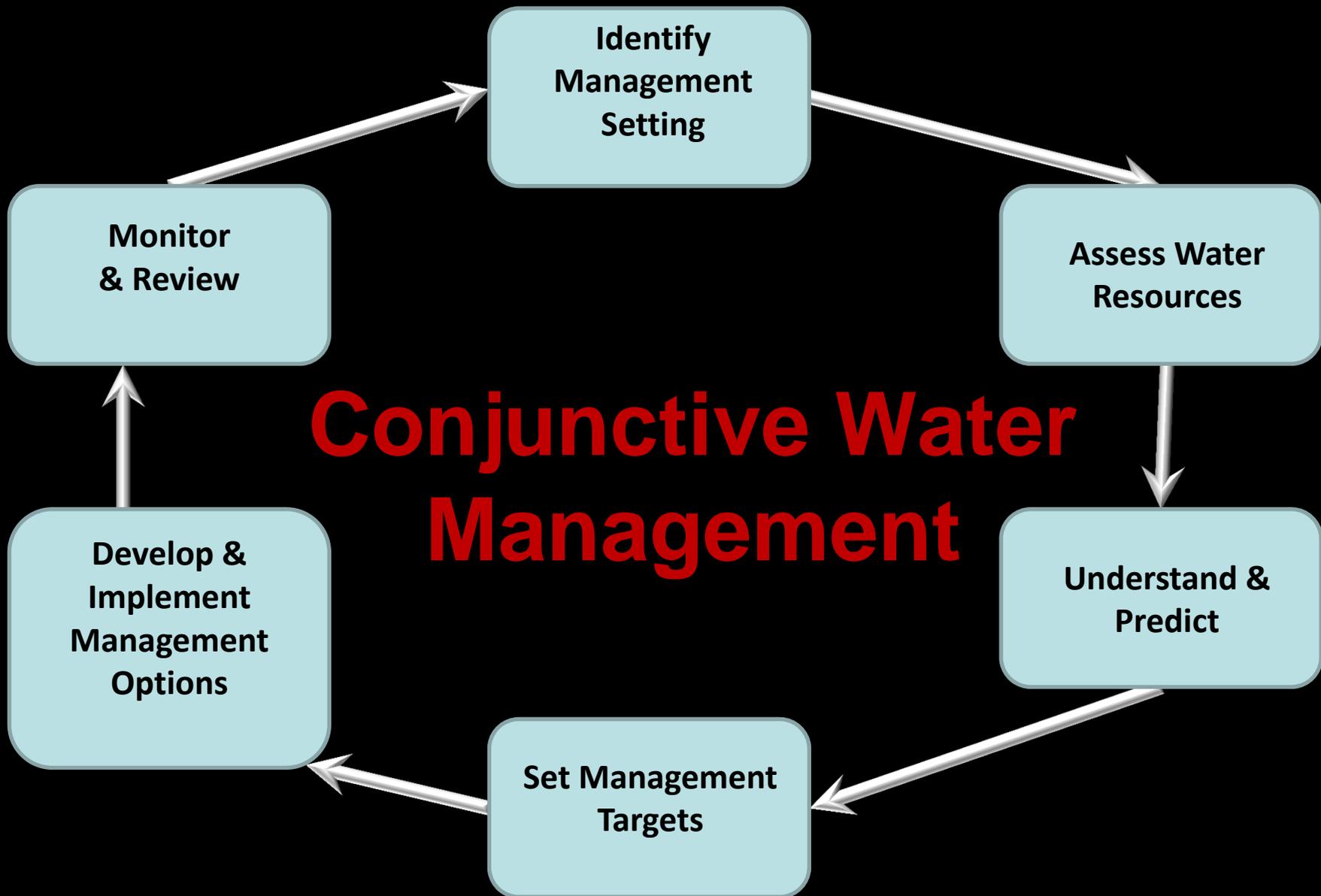
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- Adaptive process to maximize use while minimizing impacts
- Allows for wide range of management options
- Can meet multiple objectives:
  - Water quality
  - Environmental conditions





# Conjunctive Water Management



# How will modeling tools help to *conjunctively* manage water?

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- Estimate water supply/demand
- Understand surface/groundwater relationships
  - Spatial
  - Temporal
- **Test management options before implementation**

# Aiding in management option choices

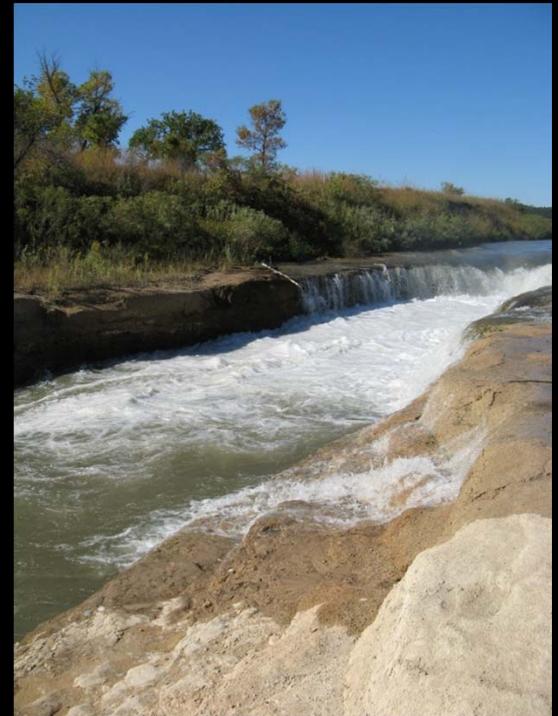
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- What happens when all surface water users switch to groundwater?
- What are the impacts of surface water recharge projects—which locations are better than others?
- How long might it take to see the impact of retiring irrigated acres?
- SW wet years, GW dry years?

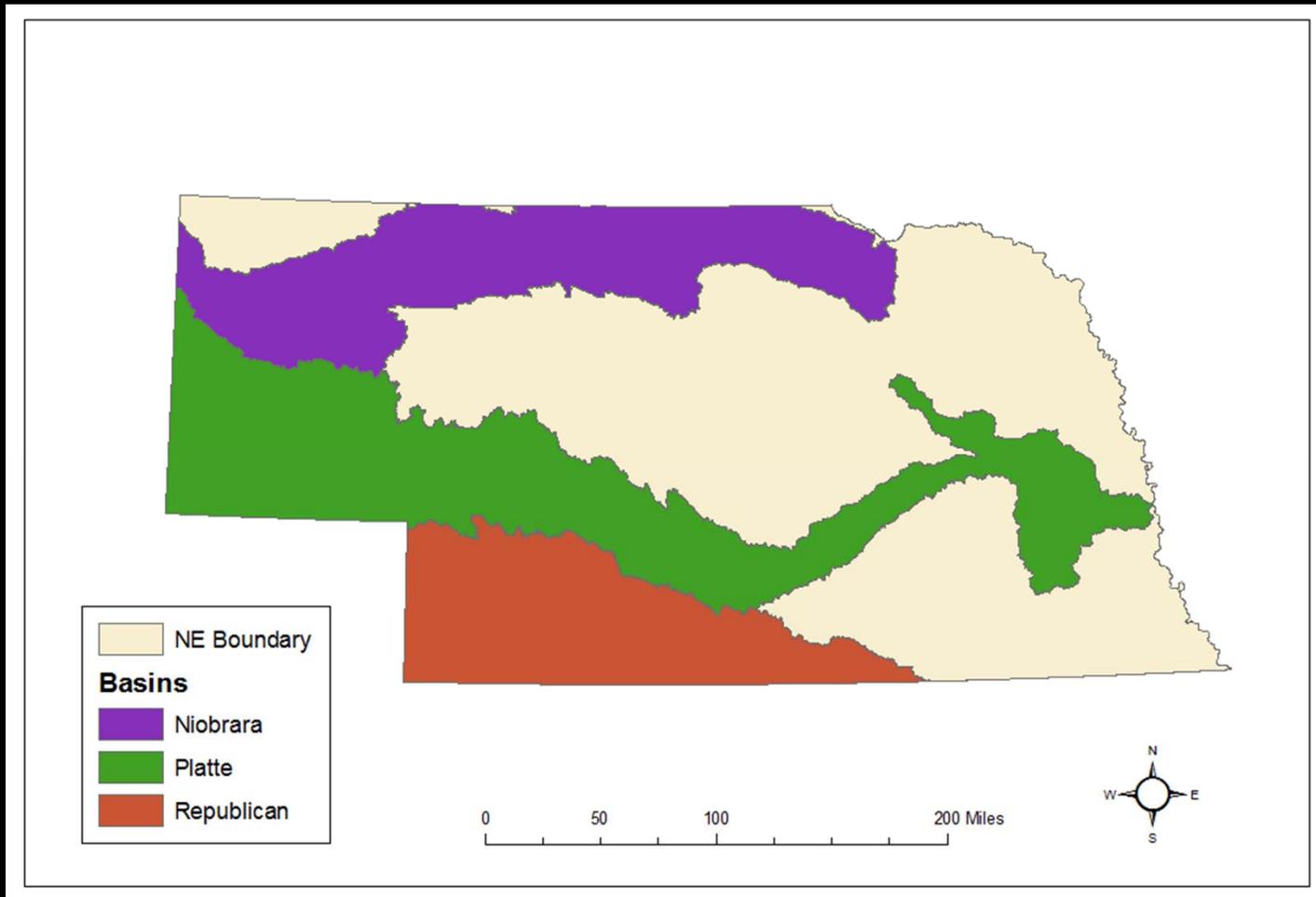
# What modeling tools are being developed?

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- Groundwater models
- Surface water/operations models
- Land use models
- Economic models (Niobrara)



# Areas



# Niobrara

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- Water Challenges
  - Northwestern: groundwater declines-frequent administration
- Opportunities
  - Temporal water excesses—Potential
- Current Model Development
  - Groundwater, surface water operations, land use, economic, and climate models

# Platte-COHYST

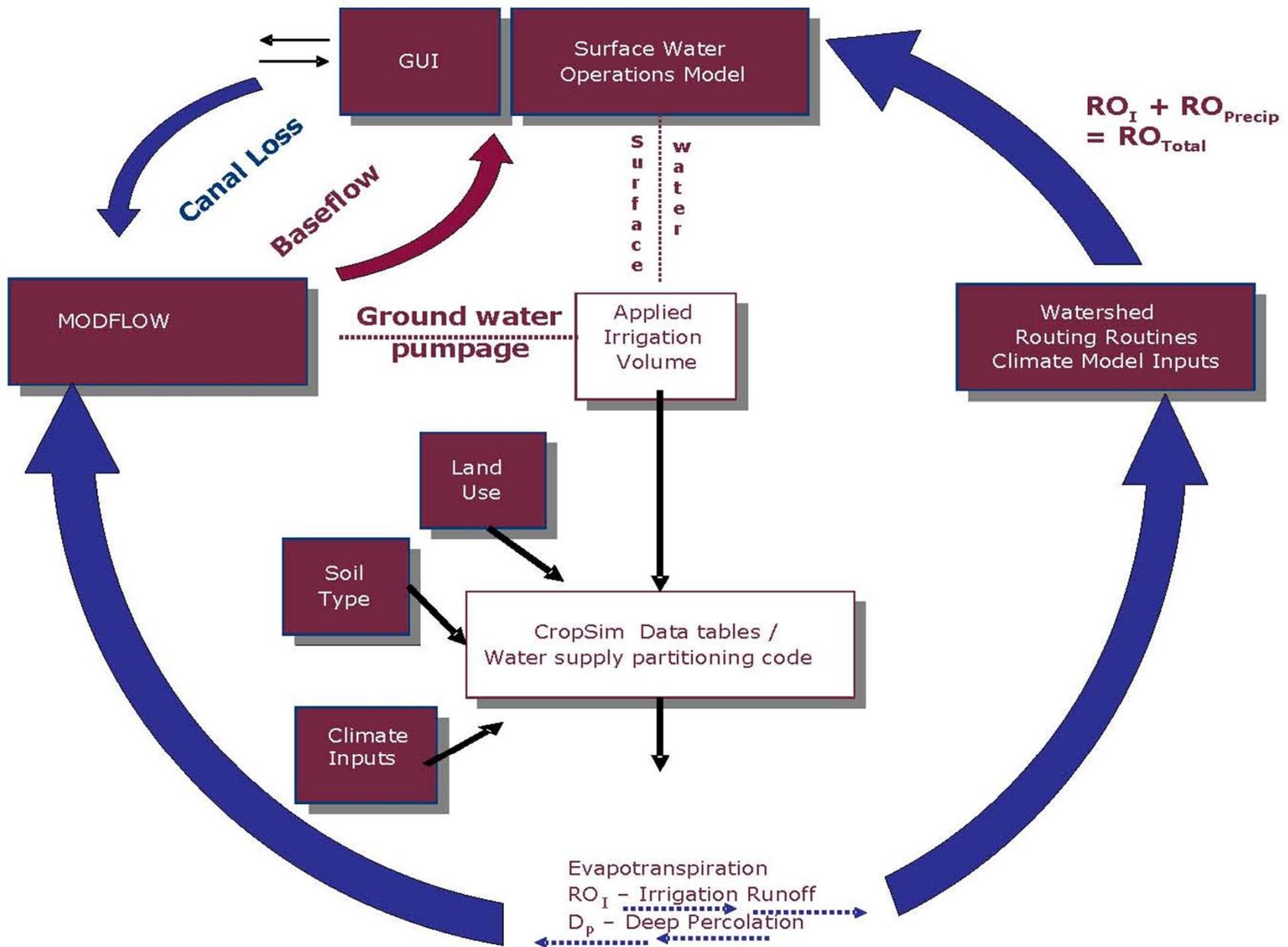
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- Water Challenges
  - Water administration, PRRIP
- Opportunities
  - Temporal excesses—Potential
  - Current Recharge Project/Study
  - Excess Flow Report
- Current model development
  - COHYST2010, land use, and surface water operations models

# Republican

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- Water Challenges
  - Variable supply
  - Equitable surface-groundwater solutions
- Water Opportunities
  - Temporal excesses—Potential
- Current model development
  - Groundwater model (RRCA)
  - Surface water operations model



# Educational

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- Model tools to explain hydrologic relationships
  - Simplified
  - User-friendly—can adjust inputs
  - Web-based—no special software required





**Nebraska**  
Department of Natural Resources



**Brandi Flyr, Ph.D., IWM Coordinator**  
Nebraska Department of Natural Resources  
[brandi.flyr@nebraska.gov](mailto:brandi.flyr@nebraska.gov)