Historical CU Analyses: A Case Study

- Introduction - Overview
- Crop ET – Weather/Climate Data
- Water Supply Analysis
- Crop Information
- Using StateCU
- Recap – Summary and Tips
Why a case study?

- Feedback from ET Workshop in March 2010 indicated interest in a case study to show basic methodology for using existing consumptive use model.
- Step-by-step example
Case Study - Introduction

- Wanted basic example with a few typical issues
  - Change of irrigation ditch water rights
  - Multiple ditch priorities
- Minimal complications
- No supplemental well water
Case Study - Introduction

- James Ditch selected
  - Located in Division 1, WD 5, Boulder County.
  - Ditch diverts from South Branch of St. Vrain Creek, trib. of South Platte River.
  - Three water right priorities decreed for ditch.
Case Study

Introduction
Case Study - Introduction

- James Ditch – change case
  - Change of approximately half of shares in ditch decreed in 2010 by water court.
  - Change from irrigation to a variety of municipal uses.
  - Over 800 acres irrigated on combination of eight parcels.
Case Study - Introduction

- James Ditch – change case
  - Irrigation by flood and furrow.
  - Crop types included alfalfa, beans, corn, pasture grass, spring grains, and sugar beets.
  - Soils reported as clay and clay loam.
Case Study - Introduction

- James Ditch – change case
  - Change of water right requires the historical return flows to be maintained to mimic historical operations.
  - Change of irrigation right requires dry-up of historically irrigated lands.
Case Study - Introduction

- James Ditch – change case
  - Future diversions of changed shares limited by maximum monthly and annual volumetric amounts and (per change case) also by a 45-year rolling average volumetric limit.
- Case study example…
Case Study – Recap

Summary and Tips

- DWR review of HCU analyses for changes of water rights.
  - Applications to water court.
  - Applications for substitute water supply plans.
- Change should not result in expansion of use or injury to WR.
Case Study – Recap
Summary and Tips

- Recommend use of StateCU.
- Free download available at the CDSS website at:
  http://cdss.state.co.us/software/Pages/StateCU.aspx
- Quick Start and TSTool Manuals also available at this site.
Case Study – Recap

Summary and Tips

- **Recommended:**
  - Quantification of HCU should be based on a year-by-year analysis that uses a monthly time step.
  - Compare irrigation deliveries to irrigation water requirements and use the smaller of the two values.
Case Study – Recap Summary and Tips

- **Don’t:**
  - Fill missing data in diversion records with average values.
  - Determine HCU by comparing long-term average diversions with long-term average crop irrigation requirements.
Case Study – Recap Summary and Tips

- **Don’t:**
  - Multiply diversion records by an irrigation efficiency to calculate HCU.
  - Assume full water supply means the irrigation water requirement of crop represents the HCU.
Final Tip:
- Use caution when proposing to use a calibrated crop coefficient in an area outside of where it was developed. Transfer of crop coefficients should be done conservatively.
Questions?