# On Farm Water Budget

Allan Wylie IDWR

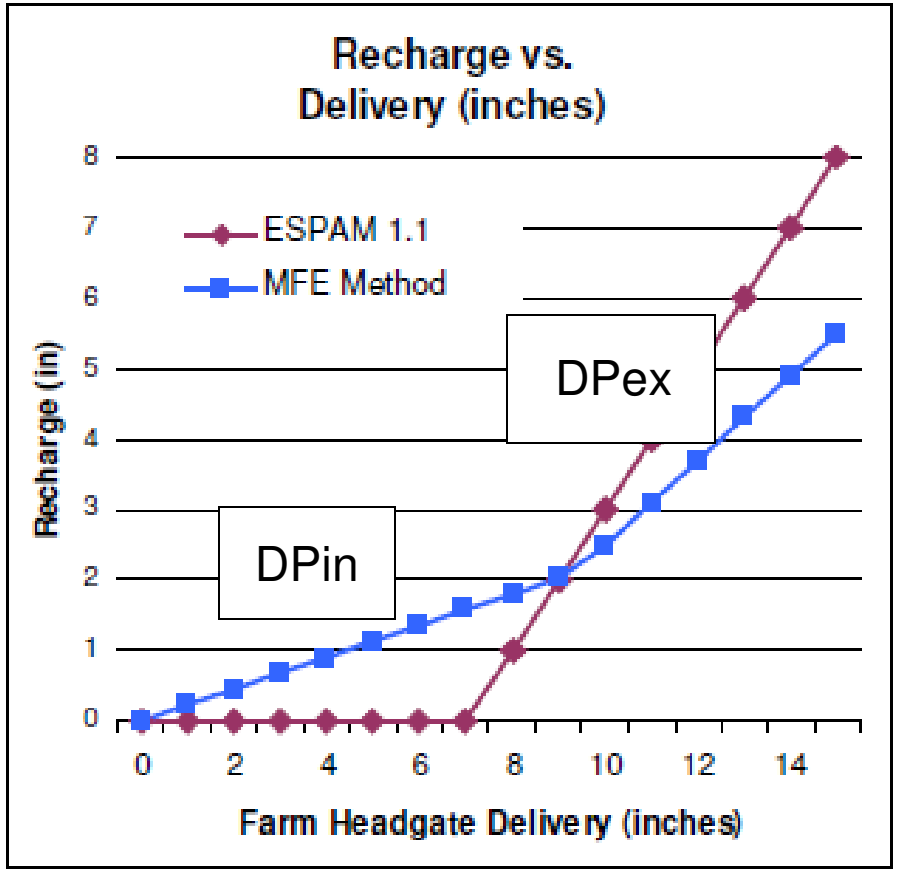
# On Farm Water Budget

- Evaluate Sullivan/Schroder On Farm module
  - ESHMC recommendations
    - Three runs
      - Use “Maximum Farm Efficiency using Runoff for Returns” option for all
      - Hold DPex and DPin and adjust EffSP and EffGR
      - Adjust DPex, DPin, and hold EffSP and EffGR fixed
      - Adjust DPex, DPin, EffSP and EffGR

# On Farm Water Budget

- 4 parameters per entity
  - Flood efficiency (EffGR)
  - Sprinkler efficiency (EffSP)
  - Deep percolation of excess water (DPex)
  - Deep percolation of infiltrating water (DPin)
- 41 SW irrigation entities
- 164 adjustable parameters

# Deep Percolation Parameters




- For both flood and sprinkler irrigation
  - Deep percolation of excess water (DPex)
  - Deep percolation of infiltrating water (DPin)

# Run holding DPex and DPin fixed

- Use “Maximum Farm Efficiency using Runoff for Returns”
- DPex = 0.5
- DPin = 0.9
- EffSP adjustable 0.4 – 1.0
- EffGR adjustable 0.1 – 0.7
- Group surface water entaties
  - Those with long canals
    - Aberdeen Springfield, AFRD#2 and Northside
  - Those diverting above American Falls
  - Those diverting below American Falls
  - Those not diverting from the Snake River

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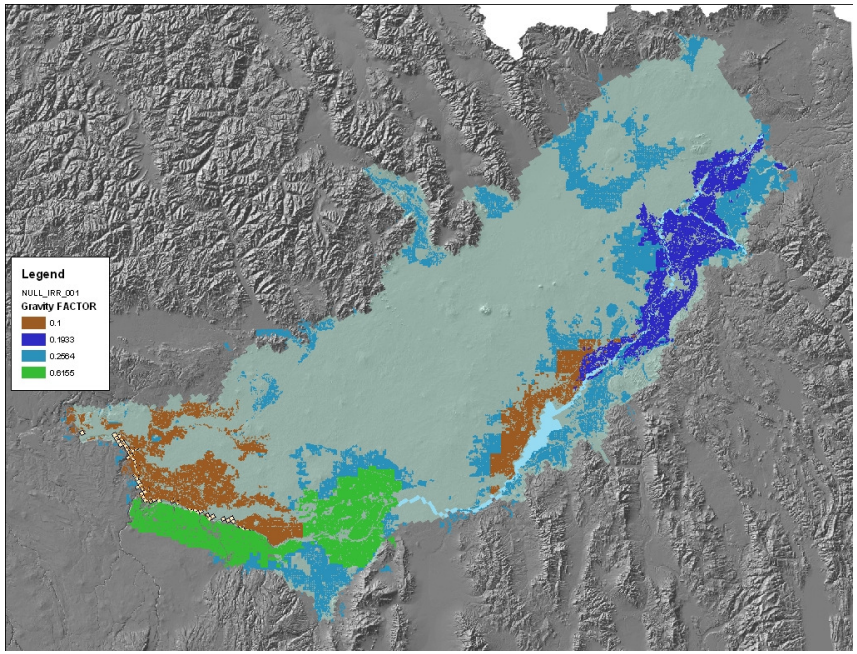
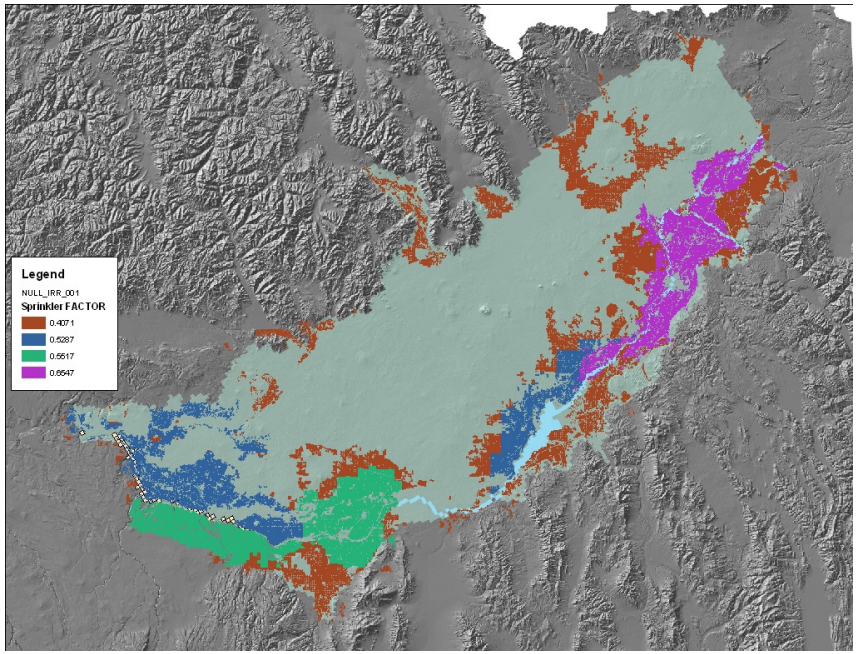



- DPin = 0.9
- DPex = 0.5
- EffSP and EffGR adjustable
- Readinp
  - Standard error = 7.765
- OnFarm
  - Standard error = 7.687

# On Farm Water Budget

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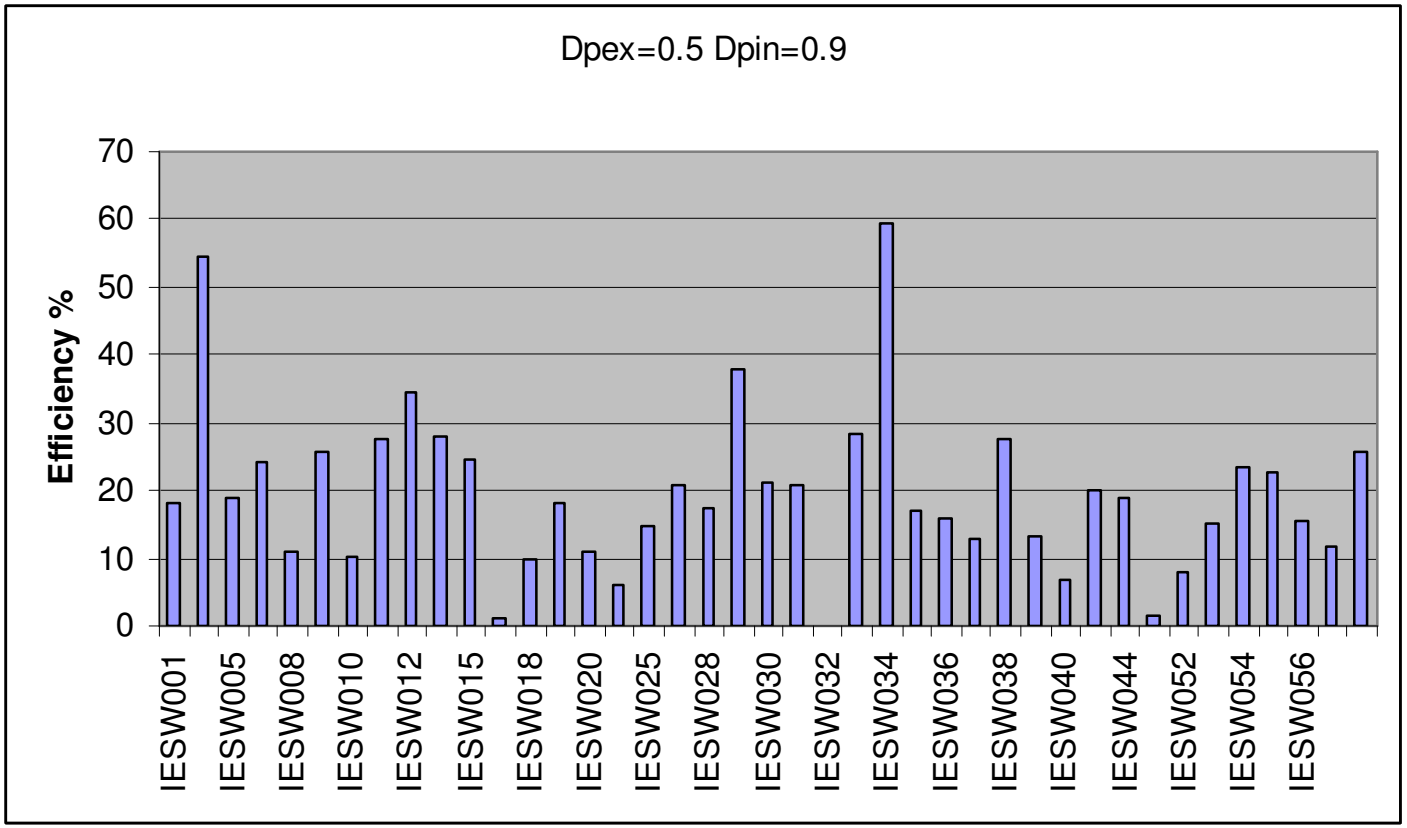
# Surface water irrigation/system efficiency




- IESW001 A & B SW,
- IESW002 Abdn Sprfld,
- IESW005 Big Lost River,
- IESW007 Big Wood,
- IESW008 Blaine,
- IESW009 Burgess,
- IESW010 Burley,
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- IESW029 Mud Lake,
- IESW030 New Sweden,
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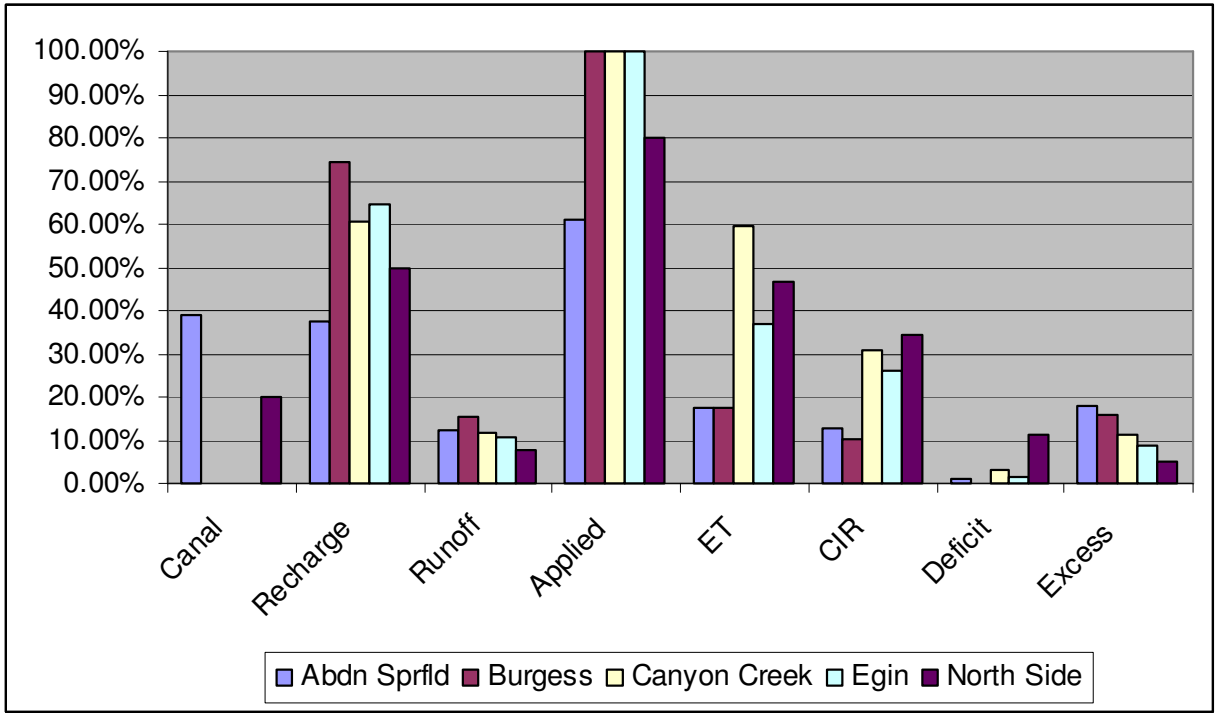
- IESW056 Henrys Fork,
- IESW057 Blackfoot River

# Surface Water Fate DPin and DPex fixed




| | |
|---|---|
| Canal | Canal Seepage |
| Recharge | Deep percolation to groundwater |
| Runoff | Surface runoff |
| Applied | Applied surface water irrigation |
| ET | Evapotranspiration |
| CIR | Crop Irrigation Requirement |
| Deficit | Unmet CIR |
| Excess | Irrigation more than CIR |

# Run holding EffSP and EffGR fixed

- Use “Maximum Farm Efficiency using Runoff for Returns”
- DPex adjustable 0.5 – 0.00001
- DPin adjustable 0.9 – 0.00001
- EffSP = 0.64 except for long canals = 0.85
- EffGR = 0.48 except for long canals = 0.60
- Group surface water entaties
  - Those with long canals
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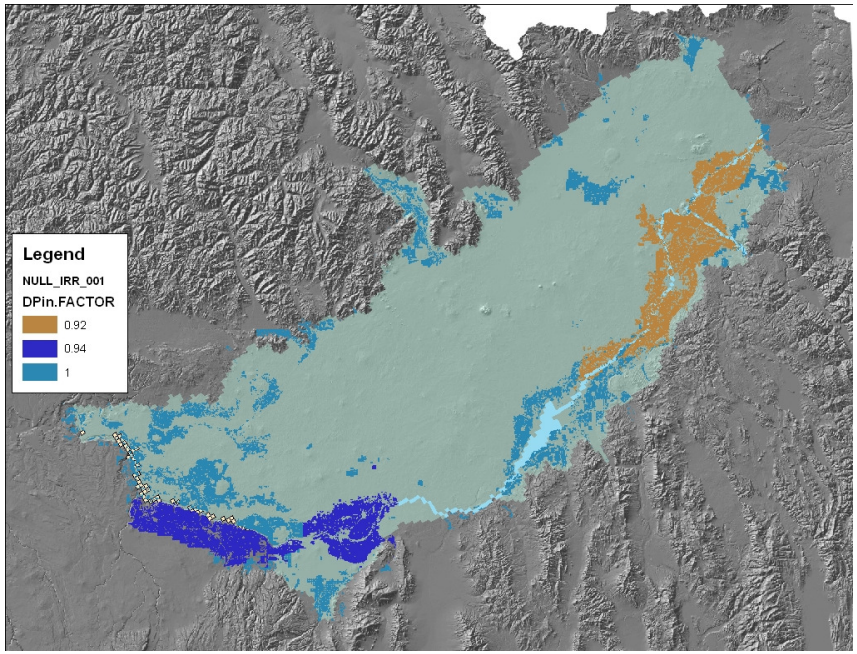


- DPin and DPex adjustable
- EffGR = 0.48
  - Long canals = 0.60
- EffSP =0.64
  - Long canals = 0.85
- Readinp
  - Standard error = 7.765
- OnFarm
  - Standard error = 7.565

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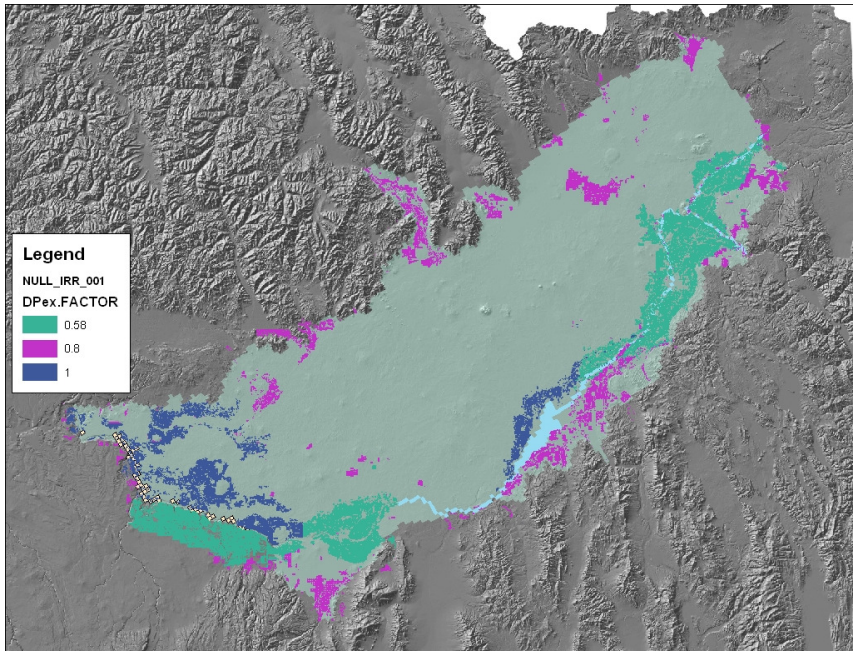


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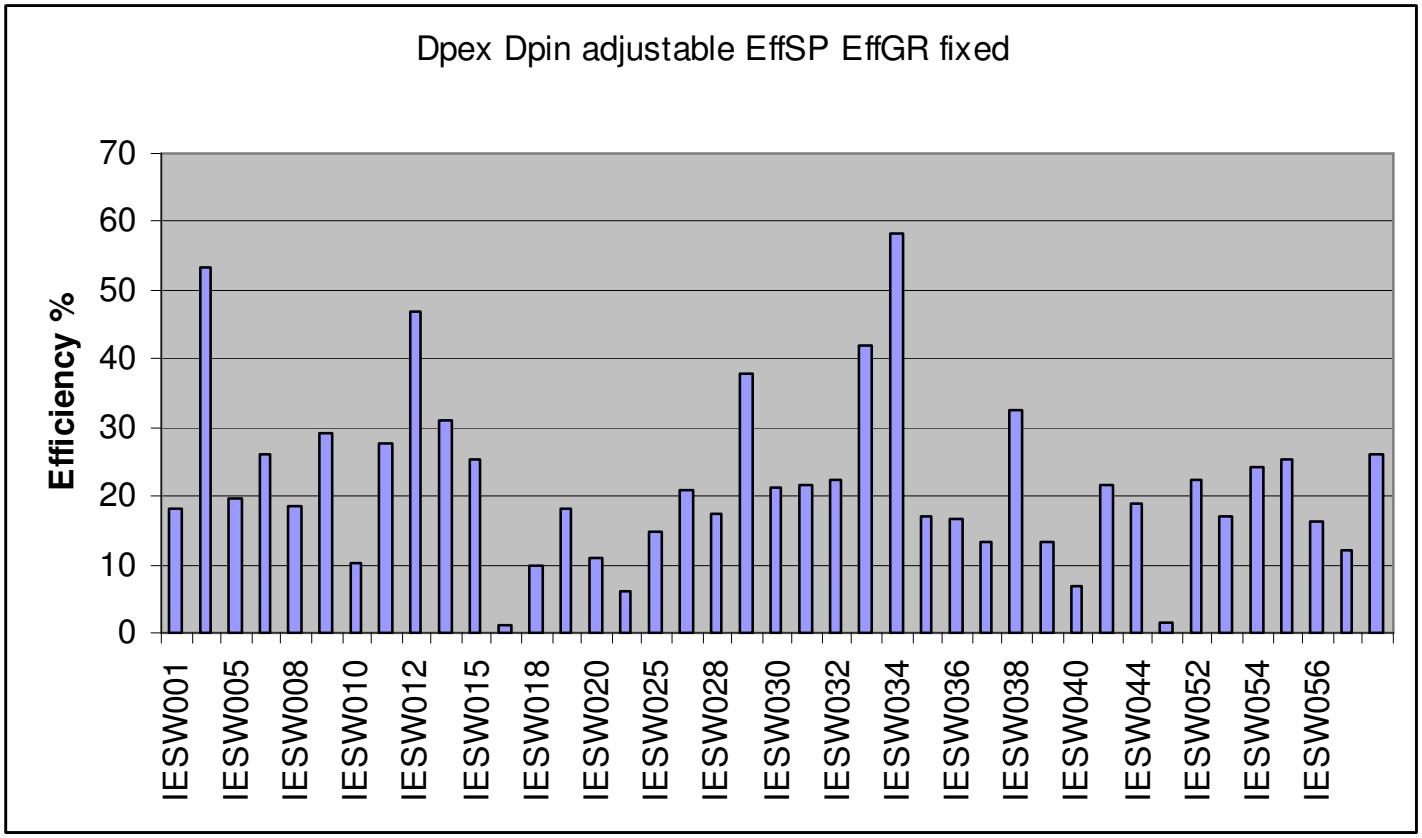
# Surface water irrigation/system efficiency

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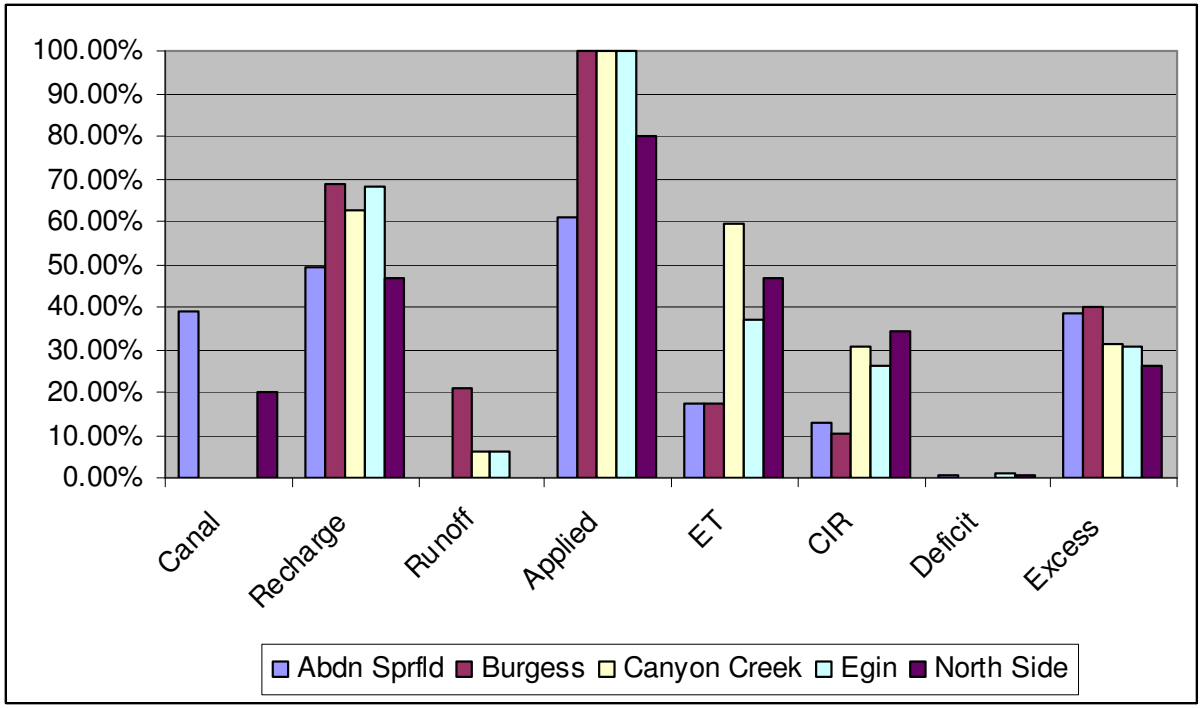
# Surface Water Fate EffSP and EffGR fixed

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# Run EffSP, EffGR, DPin, and DPex adjustable

- Use “Maximum Farm Efficiency using Runoff for Returns”
- DPex adjustable 0.5 – 0.00001
- DPin adjustable 0.9 – 0.00001
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- Group surface water entities
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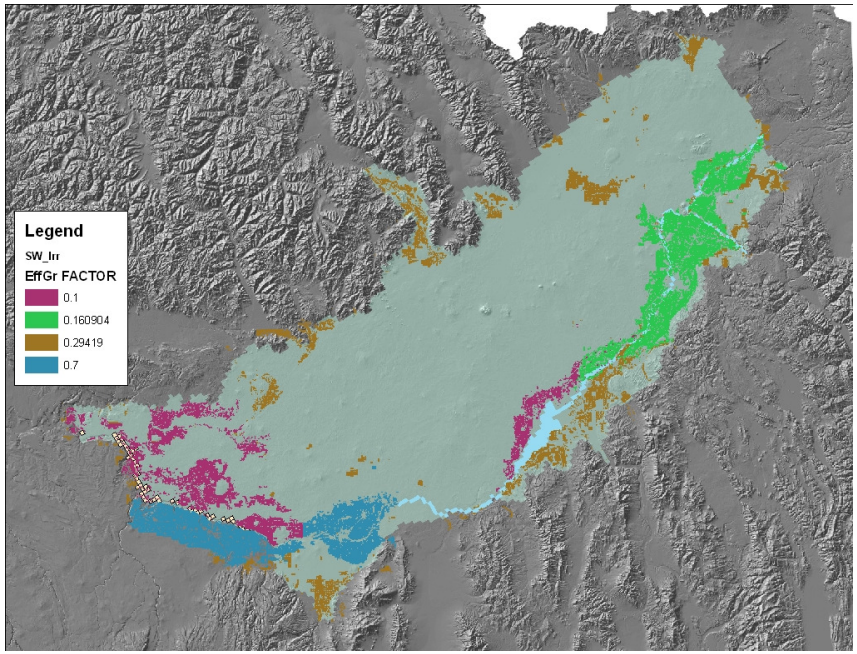


- EffGR and EffSP adjustable
- DPin and DPex adjustable
- Readinp
  - Standard error = 7.765
- OnFarm
  - Standard error = 7.384

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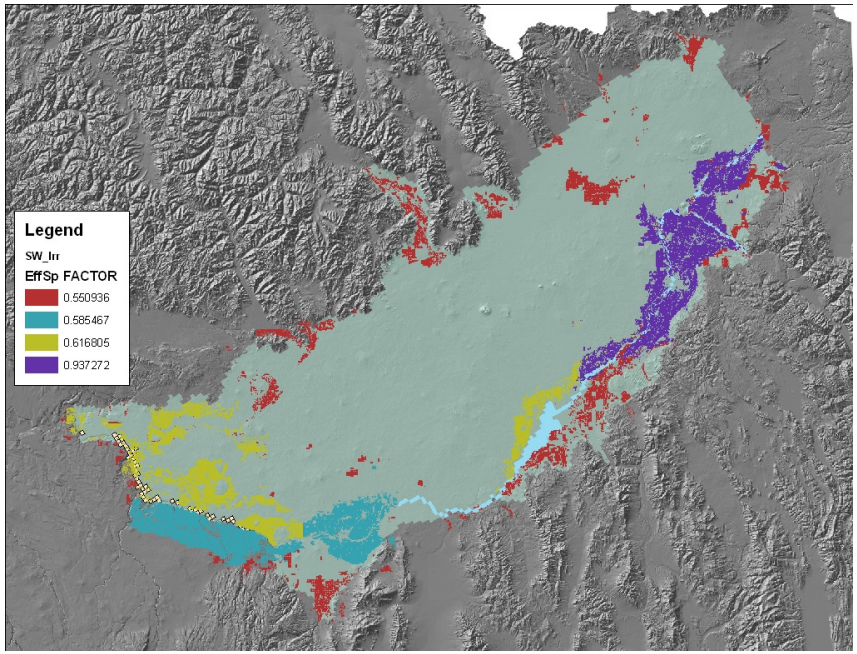


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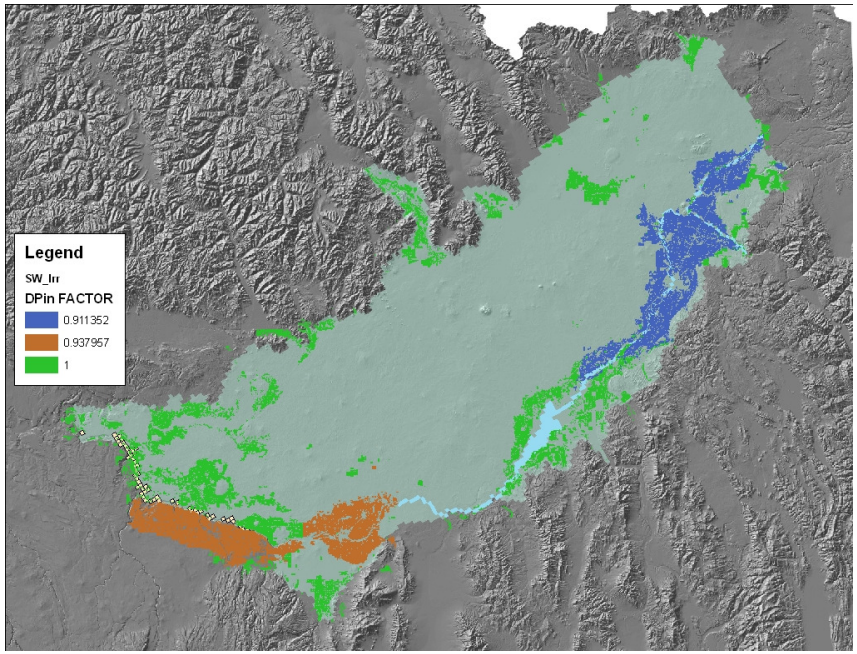


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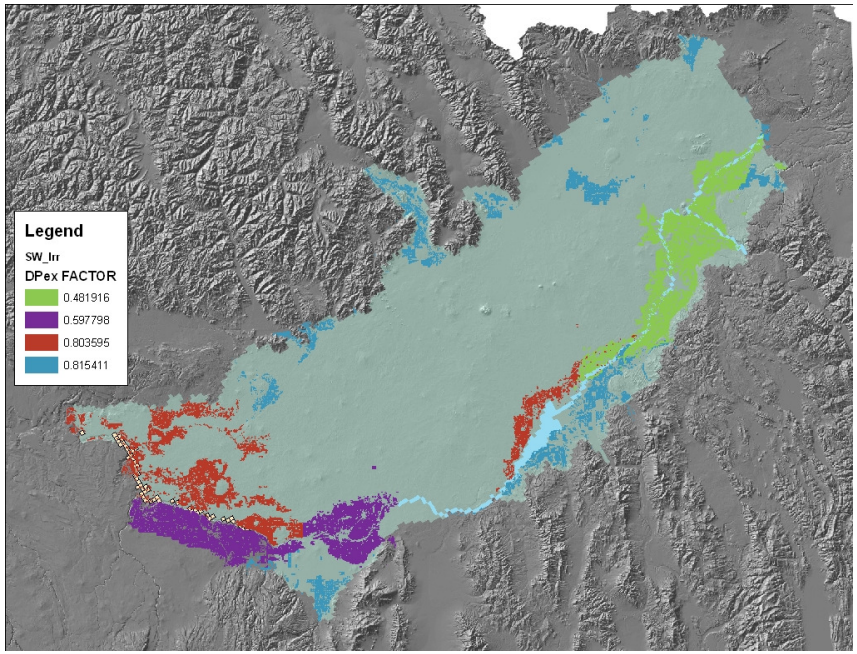


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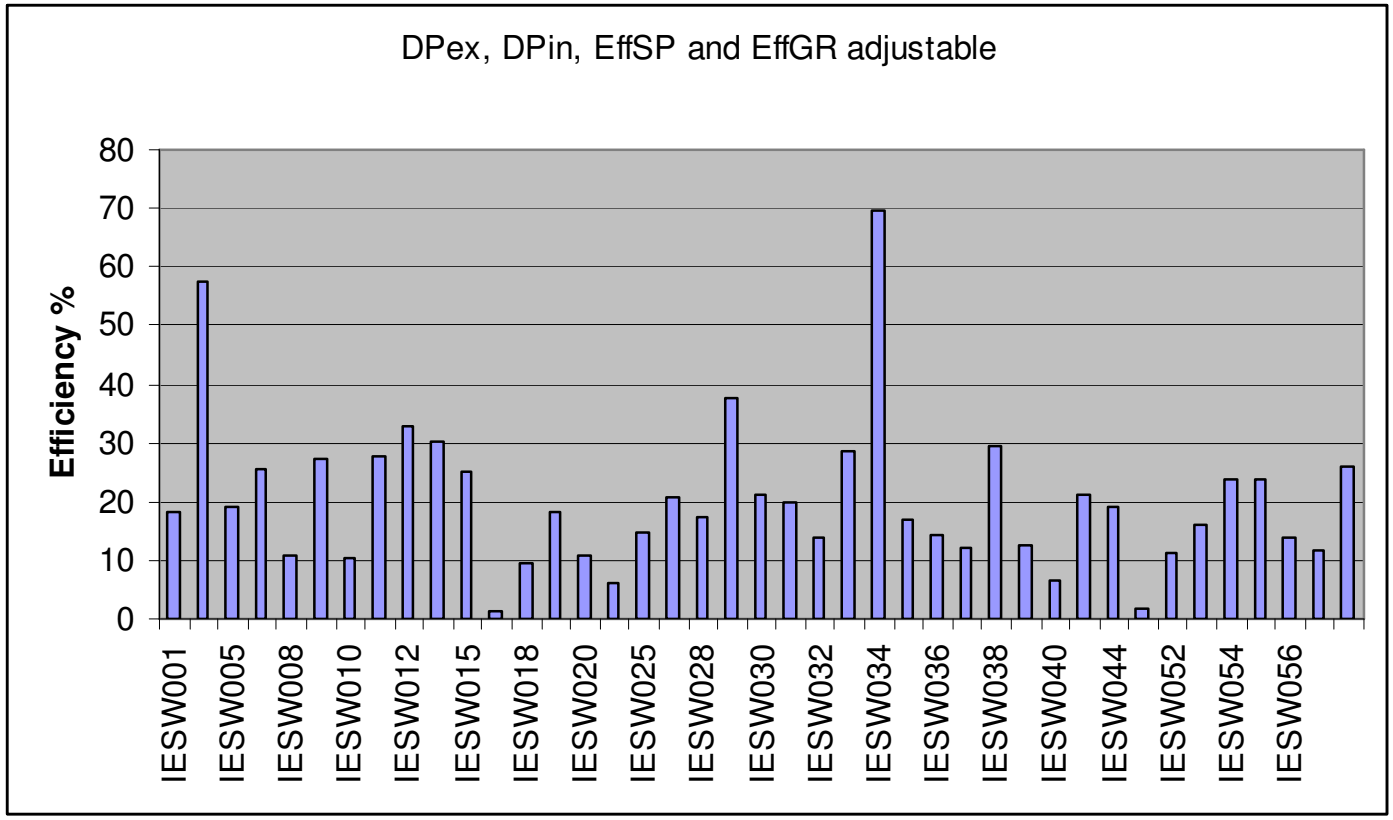


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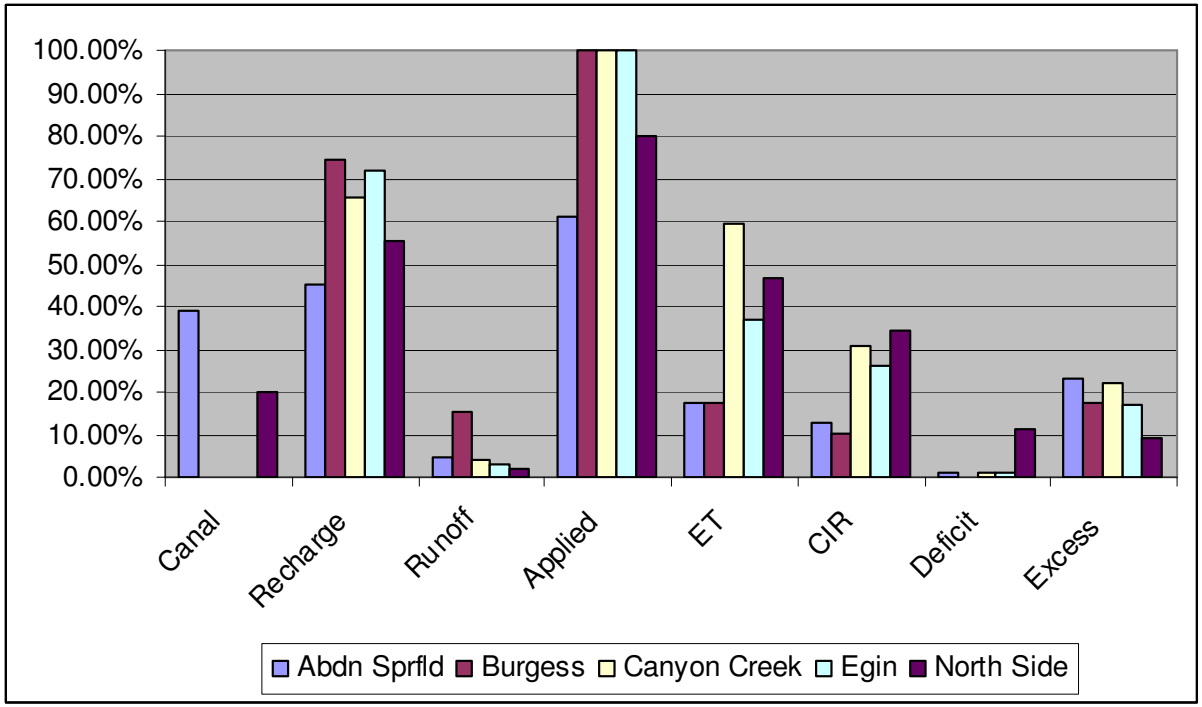


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